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On the Genesis of this Memorial Issue for Patrick O'Brien

By Douglas Alton Smith

A teacher of the stature of Patrick O'Brien appears perhaps once in a century or more. I have concluded that he is one of the greatest teachers in the history of the lute and guitar. Only after rereading his brief autobiography in *The Hand*, and my transcriptions of the lessons he gave me, as well as reports written by students whose seriously impaired performance ability was restored by his therapeutic guidance, did I begin to comprehend the magnitude of his research and pedagogical achievement. How astonishing that a nearly entirely self-taught musician could research and discover on his own the anatomical and physiological principles of plucked-string performance technique which would cure the most common hand pathologies of guitarists and serve as a basis for healthy and efficient guitar and lute pedagogy. His knowledge was so advanced that neurologist Dr. Frank Wilson, director of a clinic specialized in treating musicians at the hospital of the University of California, San Francisco, would consult him repeatedly for guidance over a period of more than two decades. Patrick was that far ahead of us all.

I first met Patrick O'Brien at the LSA Seminar at Barrington College in 1976, for which I acted as co-director and leader of a workshop on Silvius Leopold Weiss. One of the participants in that workshop was a bearded guitar and lute player who I later discovered should have been my mentor, not my student. Being then in the process of researching and writing a doctoral dissertation on Weiss's works, I had acquired advanced knowledge of the composer and his compositions, but Patrick was leagues ahead of me in knowledge of how to play them. Already forty years ago he was an expert on the anatomy and physiology of the hands, as well as the pathologies that some musicians including himself had encountered, and on the application of this knowledge to performing plucked-string instruments in a way that will maximize efficiency and avoid injury.

Alas, since I lived thousands of miles distant from Patrick, I had no opportunity to study with him until May of 2012, when I made a cross-country trip for an unrelated reason. Never having been given a thorough technical foundation for lute or guitar playing by any teacher and being thus handicapped as a performer, I determined to take some

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lessons at last with Maestro O'Brien. He graciously found three hours for me in his teaching schedule, and permitted me to record the sessions with the video feature of my compact digital camera, mounted on a mini-tripod. I set the format for only 320 x 240 pixels, since the resulting .mov files would be very large at higher resolution, and I did not wish inadvertently to lose a single minute because of storage issues. In this low-resolution format and without a cameraman monitoring to select the perspective and zoom in on details periodically, the videorecordings are hardly ideal from a publication standpoint.

But thankfully, the audio is perfectly adequate, and the recordings therefore preserve a unique synopsis of Patrick's pedagogical system. He states at the outset that because I would only be in front of him briefly, he would condense his material and try to offer me as much as possible its full scope in two abbreviated afternoons, rather than parceling out bits over months or years of lessons as he would for a local student. With the aid of the recordings, I could then absorb the teachings at my leisure.

Attempting later to organize professional-caliber videorecordings of Patrick at work, I arranged with a recording studio on the Case Western Reserve University campus to record the maestro teaching a student or two at the LSA Seminar in the summer of 2014. Pat was amenable. A couple weeks before the seminar I phoned him to discuss the plans. Alas, that was our last conversation.

After his death, I realized that I was not getting the full value of the lessons I had had, since it takes three hours to get through the films without stopping, and so I was only focusing on parts. I undertook to transcribe all of them for my own use, as well as an audio recording of his long lecture on practicing at the LSA Summer Seminar in 1982, which I obtained from LSA Librarian Anne Burns. A reader of the transcript can read and absorb this material much faster in print than on video or digital audio, and it is easier to see the organization of the whole and to focus on one bit at a time when it's on paper.

Months later, the editors and editorial board of the *Journal* began to discuss a special memorial issue dedicated to Patrick, but we despaired of having enough appropriate material. It then dawned on me that I might have an entire *Journal*'s worth already in first-draft form on my hard disc. So I sent my transcriptions to the editors and to Christopher Morrongiello, who had studied with Patrick for years and would be able to evaluate how complete my lessons had been and to contribute tablature examples. Their judgment was positive.

Patrick had disseminated his knowledge almost exclusively orally in lessons, personal consultations, or lectures. Therefore, though numerous professional lutenists and guitarists and many amateurs

profited by his teaching, most of us could not. It is most fortunate that the recordings of our lesson sessions, made initially for my own edification, can now serve to introduce all lutenists and plucked-string players to Patrick's pedagogy. He was unusually articulate, both in a lesson and when lecturing to a group, so his words transfer effortlessly to formal, academic print, though in a conversational tone.

It is significant that Patrick begins the Lessons from the standpoint not of gross body posture, but of the fingertips, the smallest anatomical component of performance posture. The rest of the body, from the larger finger bones and muscles to the forearm, upper arm, and torso must support optimal placement and manipulation of the fingers. For he had long ago discovered that overuse of the tip joints—distal flexion—can lead to dysfunction, and could even end great careers such as that of pianist Glenn Gould.

On my lap at the sessions I held not a lute but a rented steel-string guitar. In response to my question at the very beginning, Patrick assured me that the principles and exercises he would be teaching me apply equally to almost any plucked-string instrument and any musical style. He spoke from his perspective of decades-long acquaintance with 5-string banjo, classic and folk (steel-string) guitar, jazz guitar, bass guitar, and surely other instruments that he did not mention. Early in his musical career he learned from folk and jazz musicians and later from classical guitarists such as Alice Artzt. In the Lessons he frequently told anecdotes about other musicians and where he learned this or that technique. We preserve many of these anecdotes or observations in order to illustrate not only the points Patrick was making, but also to illuminate his multifaceted musical personality and background.

Since its inception, this *Journal* has tended to print articles on newly-developed or little-known aspects of lute history, be it a composer's biography or his music, or lutherie, rather than applied pedagogy. Though the discoveries and innovations of Patrick O'Brien are no longer completely new, as he taught them for decades and many of his students in turn have taught them to others, they still remain relatively little known or undiscovered to most of the world of plucked-string musicians because he did not publish most of them. This and subsequent *Journal* issues will attempt to fill this lacuna.

It is profoundly gratifying to the editors that we can preserve with this memorial *Journal* issue much of the essence of the teaching of Patrick O'Brien and that also in the process a vivid image emerges of the man himself.

Lessons with Patrick O'Brien

By Patrick O'Brien
Transcribed and Edited by Douglas Alton Smith

Editor's Introduction

During the afternoons of May 23 and 24, 2012, I spent a total of three hours in the Madison Avenue studio of Patrick O'Brien as his folk guitar student. Long before, in the early 1970s, I had begun to play the Renaissance and Baroque lute as well as theorbo, though I never lost interest in folk guitar and banjo, which I had played in the late 1960s together with musician friends and with my father.

I was self-taught on the folk instruments, but while in music school I took lessons on classical guitar in Vancouver, B.C. in 1971 and 1972 with Christopher Jordan, a former student of Eduardo Sainz de la Maza and Julian Bream. Later in the 1970s, Stanley Buetens at Stanford University and Eugen Dombois in a few lessons at the Schola Cantorum Basiliensis were my lute teachers. They did not focus on developing a thorough technical foundation, so my technical ability never reached a really advanced stage, though I was able to play theorbo with the San Francisco Spring Opera (in Cavalli's *L'Ormindo* in 1974) and a couple other ensembles. I once presented a lecture-recital on baroque lute featuring Silvius Weiss's works at the Claremont Graduate School, and played the same program on Los Angeles radio station KPFK. Yet without superior technical training, I harbored no illusions of becoming a serious recitalist.

I had known Patrick's reputation as a master teacher of plucked-string technique since we first met at the East Coast Seminar of the Lute Society of America in Rhode Island in 1976 and desired to have him coach me on steel-stringed acoustic guitar after I began to play the instrument again several decades later. In correspondence before my trip to New York from the West Coast in the spring of 2012, he assured me that the principles and techniques he would teach me apply equally to almost any plucked-stringed instrument with a neck. Fortunately, he had no objection to my recording these sessions, so the insights he shared with me can now be passed on to all musicians.

The day before meeting Patrick, I had a guitar lesson with Patrick's former student, the professional lutenist Dr. Christopher Morrongiello, on Long Island. His approach was very similar to what Patrick lays out in the following transcriptions, thus some aspects were already familiar.

It is crucial to understand the anatomy concepts that Patrick explains in the first few pages of the lessons below. For those of us who have no medical training, the anatomical terms and concepts are not easy to follow at first. They may require repeated reading and study until they are absorbed. Maestro O'Brien had come to comprehend the structure and function of the muscles and joints of the hand more intimately than most doctors, since his perspective was that of their application to a very specific purpose—playing plucked-stringed instruments at a professional level.

Some of the most important functional implications of hand anatomy for musicians—such as the quirks of the flexor digitorum profundus—are not usually explicitly stated in medical textbooks, hence probably few physicians are aware of them. It is an even greater source of wonder that Patrick persisted in his study until he discovered these critical factors and how they affected guitar and lute performance.

Patrick's anatomical understanding forms the basis of his pedagogy. His teaching is designed to help the student avoid injury to the hands such as he himself had suffered and which he subsequently treated in patient-students in his studio for decades. At the same time, his method aims to develop maximum facility with the least effort. It could only have been conceived by a player who had carefully studied the anatomy of the hand with these two specific goals in mind.

The following lessons, particularly the earlier pages, contain many but probably not all of the core teaching concepts of Patrick O'Brien. In the later pages, he tailors the exercises more to the individual student, in this case one who will be applying the techniques specifically to folk or bluegrass guitar. The underlying principles still apply to many different instruments and musical styles, since Patrick intended to develop the same universal facility and control of the hand and fingers regardless of their musical application.

He did not adhere solely to the subject matter. I understand from corresponding and speaking with other former students of his that frequent digressions on tangential topics were characteristic of Pat's lessons. They were one reason that the lessons and the maestro were so engaging, never boring. Thus, the lessons presented here can be regarded as typical of Pat's teaching, at once universal yet individual. Another student would have had a much different set of lessons, though the basic instructions would remain the same. Certainly no one should imagine that the instructions below are a complete compendium of his pedagogy. More elements and aspects will appear in other articles in subsequent issues of this *Journal*.

Maestro O'Brien was in his element when working with a single student or a class, where he could see immediately how the musicians applied his instructions and could make any necessary corrections to their technique. Having suffered painful hand injury himself as a young man and having seen frequently other guitarists and lutenists who came to him with hand disabilities acquired from practicing exercises in printed manuals, he was somewhat reluctant to attempt to codify and preserve his pedagogical system in article or book form.

These instructions and exercises should therefore be applied judiciously. Patrick would have recommended their use in consultation with a skilled teacher who could take his place as an objective critic of technique, since from his long teaching and performing experience, he had concluded that faulty technique is responsible for virtually all injury to the hands. If we consider that the most successful professional golfers and other athletes rely upon coaches continuously to refine and perfect their technique, and the greatest opera singers have vocal coaches and confer with laryngologists or voice therapists to monitor them and keep their instrument in shape to avoid injury, then we aspirants to higher musical achievement might well emulate their example.

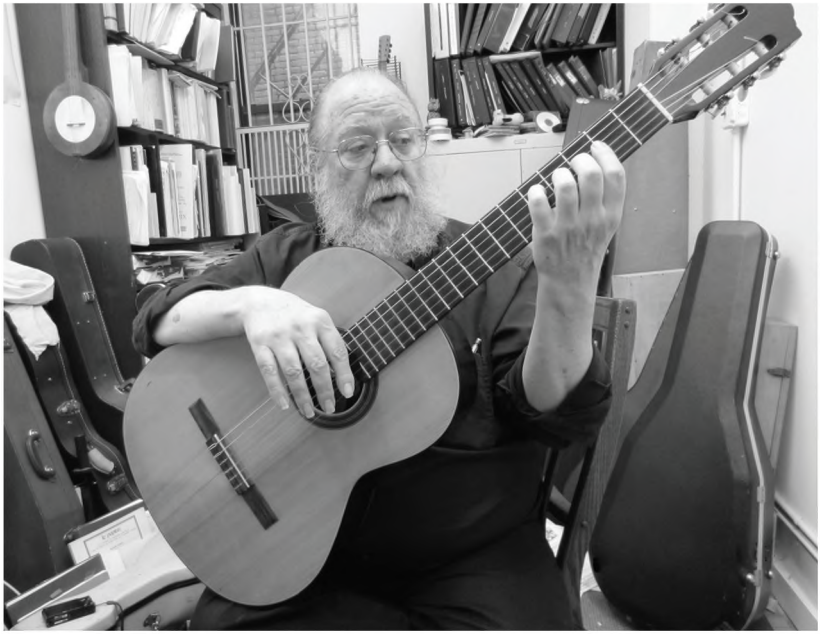

Figure 1. Patrick O'Brien in his studio. Photo by Douglas Alton Smith.

First Session

PATRICK O'BRIEN: You're only here in New York for a few days. We are trying to compress a good half a year's material into a few hours. Usually I withhold some of the information and some of the ramifications of it and speak about it in another lesson because it's just too much information.

DOUGLAS ALTON SMITH: Of course. Normally a student couldn't absorb it all at once either with the fingers or the cranium. But I've got the time to absorb this from the videos afterwards. You're not saying anything that is a mystery, it all makes sense.

So you think that there is fundamentally no difference between a good, physiologically sound technique on this steel-string guitar and technique that Chris Morrongiello or the other lutenists teach?

OB: It's essentially the same thing. I'm sure there's a situation where, for instance, you have a certain orientation to the neck and you use your thumb. But you're not necessarily changing the use of the joints of the fingers or the position of your arm. There are extraordinary uses on any instrument that look like they're out of the general, middle range of technique. Once you understand them, they're part of the continuum.

The higher the strings, the higher the action, the heavier the strings, the greater the tendency to play an instrument very high on the body so that the player can apply quite a bit more arm and shoulder weight. At a certain point you don't need much tension. You'll pull the instrument lower and lower if you don't need much leverage because the amount of weight you need is so much less. People play electric guitars very low on the body, but they have absurdly low action and very light tension.

The Three Causes of Hand Injury

I can define a few of the things that get people in trouble playing musical instruments. I'm looking for about three issues that are the problem with anyone who has any real trouble. These are distal flexion, abduction, and overuse of opposers. These exercises that we'll talk about will begin to eliminate any tendency in that direction.

Distal Flexion: Bending the Tip Joint

One thing that's very, very problematical on either hand is extensive flexion of the tip joints in any activity, extensive distal flexion of

the thumb or the fingers. This means bending the tip joint.

DAS: Chris was talking about that yesterday.

OB: That's based on the principle that any motion of any limb—for instance the bending of an arm—tends to have an agonist and an antagonist, a muscle which contracts to do that activity and a muscle which returns it.

Figure 2. Agonist of the lower arm. Screen capture by Douglas Alton Smith.

Figure 3.The antagonist of the lower arm. Screen capture by Douglas Alton Smith.

In neurology, those two muscles are normally said to enervate. They turn one another on and off mutually exclusively. However, you can override that system in some situations and turn both of them on at the same time, and have them battle with each other for supremacy of the joint. There are a few places where you can do that consciously, and there are places where it just happens unconsciously in your body. The tips of your fingers are one of those.

Bending from the MCP and PIP Joints

So if I flex my fingers from the base of the finger—the MCP or metacarpophalangeal joint—that is principally performed by four muscles in the palm of my hand. They're called lumbrical muscles. They roughly attach from the palm up to the middle joint of the finger. They don't really run directly into the bone, they run into the gristle that is around the bone. But still, there are four separate muscles that engage the fingers individually from that joint.

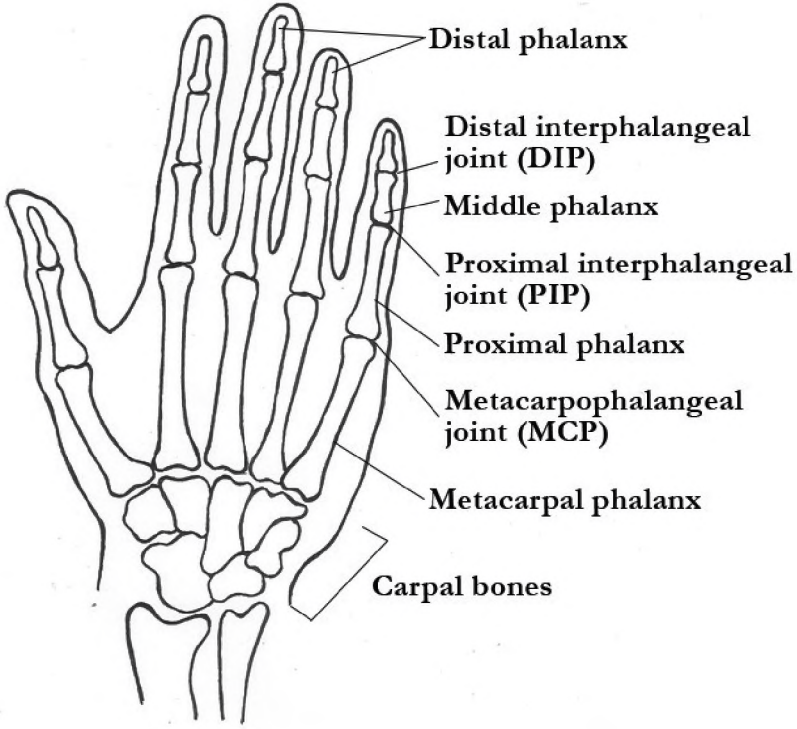

Figure 4. Phalanges (bones) and joints of the hand. Drawing by Andy Rutherford.

Lumbricals, in Latin means they look like worms, they're little tiny muscles. When I flex those, they automatically turn off the extensor on the far side of the arm. They enervate as a flexor with the extensor.

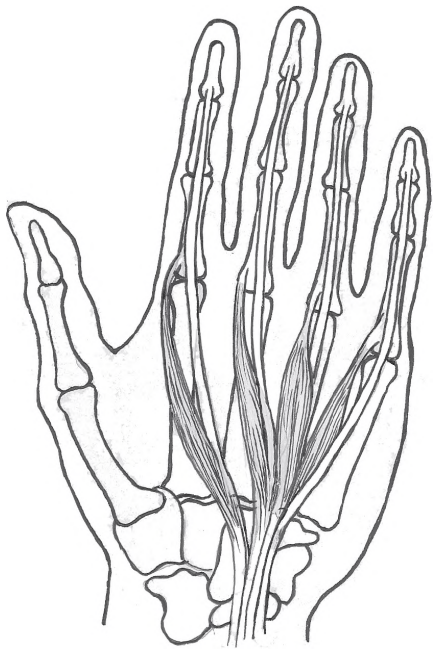

Figure 5. Lumbrical muscles, left hand, palmar (anterior) view. Drawing by Andy Rutherford.

If I bend from the middle joints, the proximal interphalangeal (PIP) joints of my fingers, that's done from a very broad sheath of muscle in my forearm, on the anterior side of my forearm. It's called the flexor digitorum sublimis, or superficialis, because it's near the surface. There's another one underneath it, the flexor digitorum profundus.

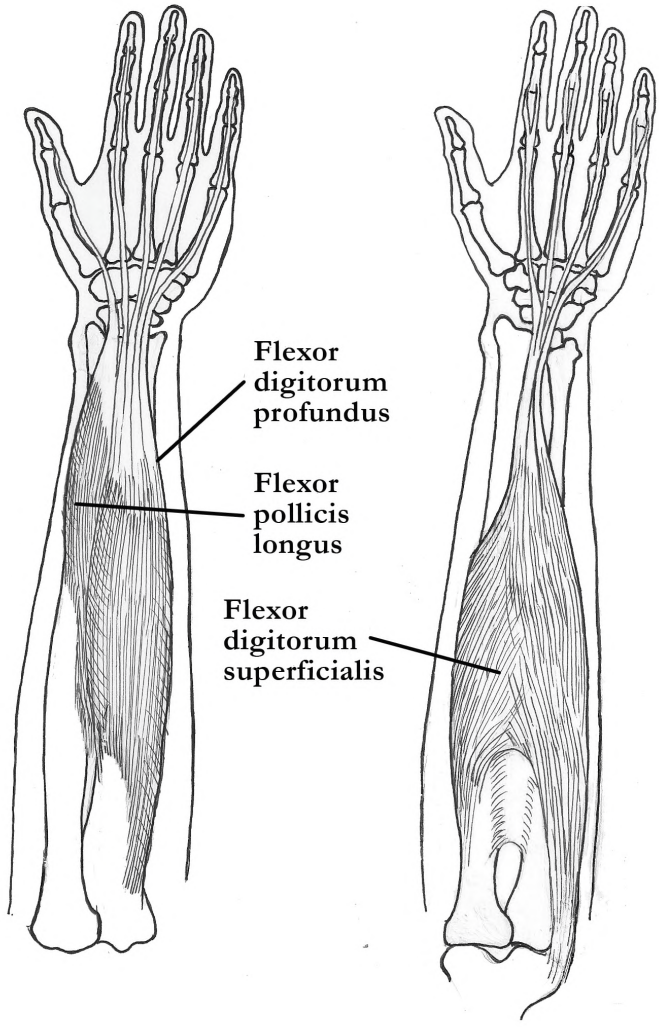

Figure 6. Flexor digitorum sublimis (superficialis) and flexor digitorum profundus. Drawings by Andy Rutherford.

When I bend those middle joints, likewise the extensor enervates that flexor. So far I'm fine, I can use this base joint, or I can use that middle joint.

Likewise there is a very useful concept, which is that I have four separate [lumbrical] muscles for engaging the MCP [base] joints. I have a broad sheath of muscle in my forearm from which the flexor tendons arise, to the middle joints of my fingers. And they are far enough apart

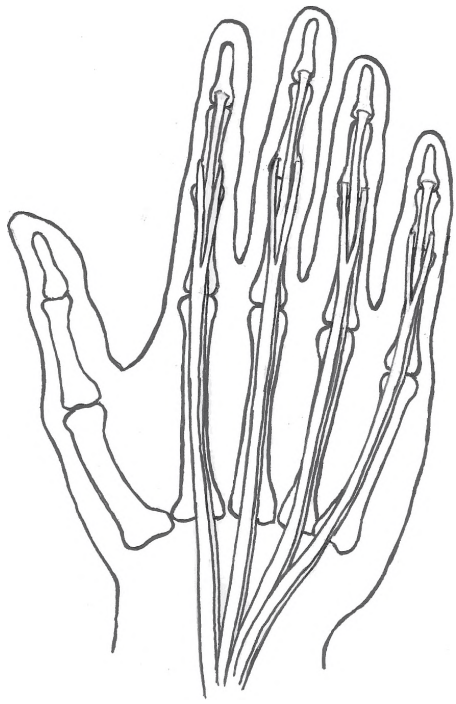

Figure 7. Tendons of the flexor digitorum superficialis and flexor digitorum profundus. Drawing by Andy Rutherford.

that I can actually flex each one separately. The amount to which you can engage each one separately depends on a few things. Mostly, it depends on how much you've ever tried to do it. But occasionally, you find people who cannot bend that finger [the little finger] more than a certain amount without the third finger going along with it.

DAS: Sympathetic attraction?

OB: Well, there's an adhesion actually, in the flexor tendons for some people. For instance, watch this gesture. [He demonstrates flexing the little finger from the middle joint.] Paul O'Dette can't do that. He would get to about here [approaching a 90-degree angle] and the other finger would follow. Which means that you can get pretty darned good without having that facility—provided you use each of those fingers in the appropriate place: the fourth finger predominantly in the treble and the third finger in the bass, rather than reversing them or doing a number of other things with them.

Well, so far, so good. MCP joints bend from the lumbrical muscles. PIP, or proximal interphalangeal joints, bend from the flexor digitorum sublimis.

The Critical Cocontraction Problem

Here's where the problem comes in. Underneath the flexor digitorum sublimis is a muscle called the flexor digitorum profundus, the deep flexor. It is narrow and it's only actually affixed to one of the two bones in your forearm. And its tendons arise in a kind of gristly mass at the extremity of that muscle such that whenever you engage one function of it, it tends quite quickly to pull the next tendon along with it. You can't move your fingers very individually from the tip joints.

That's kind of an obvious aspect that you notice when you're working on the neck. But there's something subtler that you don't realize, which is that the flexor digitorum profundus does not enervate with its antagonist, the extensor digitorum. It actually cocontracts its antagonist. If you hook the tip of your middle finger, it actually tightens the reverse [extensor] muscle at the same time. And that's what gives one the greatest number of diverse cramps and various other kinds of problems.

Actually it's easy to demonstrate. Squeeze my forearm like this, top and bottom. [DAS grips OB's forearm with his thumb underneath and index finger above.] If I bend my lumbrical muscles, that's mostly done here [OB points to the palm of his hand]. And this [he points to the top of the forearm] has to give way to allow it to happen. If I bend my middle joints from the flexor digitorum sublimis, you'll feel it under your thumb a little bit.

DAS: Yes, I do.

OB: Now if I tighten the tip joints—you can watch my tip joints—you'll feel that both flexor and extensor muscles tighten up.

DAS: Oh, boy.

OB: So at that point, where you overuse the tip segment, you are suddenly engaging both systems. It's like pressing on the accelerator and the brakes at the same time, in which case you generate more heat than motion.

Figure 8. Cocontraction. Screen capture.

Abduction

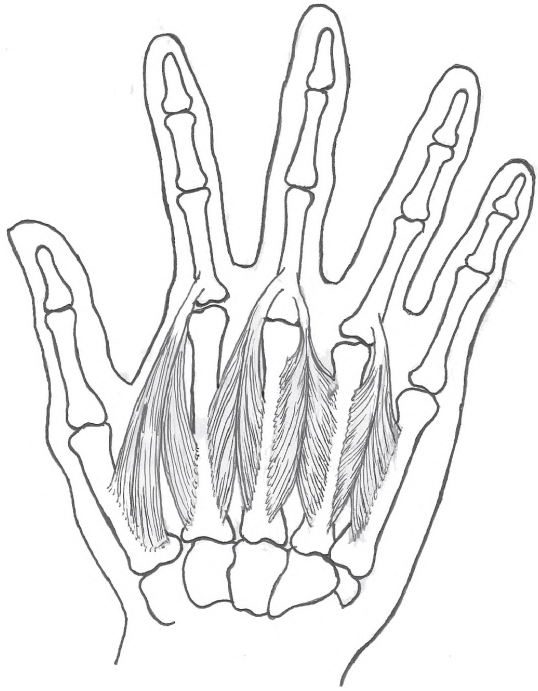

Figure 9. Abduction muscles, dorsal view. Drawing by Andy Rutherford.

[OB demonstrates spreading his fingers.] That is abduction, moving away from the center of the hand, which for our purposes, in

playing our instruments, it's really here [he indicates the base (MCP) joints of the fingers]. It navigates from the center of the middle finger.

That is a major problem, not in incoordination but in repetitive stress that causes pain in one's hands. Those two activities that probably cause the most problems are distal flexion and abduction. And everything I'm going to say from here on has to do with trying to avoid those two things, though in fact, there are a couple of things that happen in your thumb and your little finger that are outside that system.

Overuse of Opposers

Figure 10. Opposition of thumb and little finger. Screen capture.

There is an extra thing that you can do with these two fingers [touches the tips of his left thumb and little finger together]. When you oppose your thumb and little finger over there, there's an extra muscle in each of these fingers that none of the other fingers has on the outside that pulls these fingers in. It is the opposer of these two fingers. One of them is called opponens pollicis and the other one is called opponens digiti minimi, or opponens quintus—they sometimes just call it the fifth finger.

When you do this [he touches the thumb and little finger tips again tightly], muscles and tendons tighten up around this circle from your thenar eminence [muscle base of the thumb] to your hypothenar eminence [muscle base of the little finger], these two lumps. And you begin squeezing on the chemical, electrical, and the chemical energy conduits that you need in your wrist: that is, the blood vessels, the nerves, and the tendons that all have to reach through your wrist to your fingers.

Anything like that would be overuse of the opposers.

Those three things are way up in the 99th percentile of what causes hand injuries for musicians of any kind.

DAS: So that's dysfunctional tension.

OB: Yes. It is tension used counterproductively in some sense or other.

Holding the Instrument

DAS: Start by telling me, how do I hold this instrument for maximum right and left hand facility?

OB: Partly what that will be based on is my trying to get you to use the base joint and the middle joint as much as possible and the tip joint as little as possible. When I meet people who've had some sort of catastrophic breakdown of technique where they have pain in their hands, probably distal flexion is happening in 80 percent of those cases. When I have people who have gotten a painless incoordination syndrome where they have lost control of the finger, which is amazingly common—Leo Brouwer, Glenn Gould, a lot of other people—I would say that well over 90 percent of those cases happen from overuse of the tip joints.[1]

For instance, Glenn Gould's case: sitting lower and lower, he was actually using the tip joints more and more. There was no knowledge of this in the general medical community, back when that happened to him. I have a friend [Dr. Frank Wilson] who's a big deal in this world, a neurologist, thanks to whom I was able to read some of the unpublished journals of Glenn Gould where he methodically, day by day, cataloged the symptoms of the onset of an incoordination of his hand. It's remarkable, no one knew what it was, no one could help him. And because he was who he was, everyone said, "Well, you know, he's kind of eccentric." They just made a simple diagnosis.

Well no, he had a real syndrome, something which confuses your body as to the location of a limb such that you begin to give it erroneous commands based on the "garbage-in, garbage-out" situation. Where you've done something that so confused your body and done it repeatedly and quickly, your body began to synthesize an alternate command. Say the basic operating system of your hand wants this [gestures, points forward with both hands], but that is in fact not what you want.

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[1] This painless incoordination is called focal dystonia. Although he had seen many cases, he had done no formal, retrospective analysis of them. Thus Patrick gives two different percentages—80 percent and 90 percent—as his estimate of the approximate proportion of distal flexion injury among all hand disabilities of musicians.

The Pencil Trick

DAS: So the body puts a detour in there.

OB: Exactly! It does exactly that. I'll show you the famous trick. Watch. This is kind of cute to know. [He crosses his left middle finger over the index.] Do that with your fingers, just cross them, one over the other. [DAS crosses his right middle finger over the index.]

Yep. Two pencils, right? [He raises one pencil in each hand.]

Figure 11. The Pencil Trick. Screen capture.

Close your eyes. How many pencils do you feel now? [He presses one pencil against the top of DAS's middle finger.]

DAS: One.

OB: Look at it. Good. Close your eyes again. How many pencils do you feel now? [OB places the tip of a pencil against the tip of DAS's index finger.]

DAS: [Hesitantly] One prick.

OB: Yeah, it bounced a little bit, but yeah, good. Look. Close your eyes one more time. How many now? [He places one pencil tip between the index and middle finger so it is touching both.]

DAS: Two.

OB: Look. The map in your mind says that no one thing could touch in these two places at the same time. It forgot that on another channel, proprioceptively, you had crossed those two fingers over one another, doing an activity that's not very common, such that we don't really equate it with the other motions of the fingers.

Practicing Adduction

There are several non-adjacent pairs of fingers—2-4, 1-3, 1-4—which are useful for the practice of adduction. Of those three, the disparity in length between 2 and 4 makes that the first one you would like to master because it not only involves adduction, it involves defining the position of your arm such that both those fingers are poised over the same string.

And that actually is not a universal constant. I couldn't say it is 7.3 degrees because everyone's fingers have a different proportion of length. Watch. Stretch your fingers back and then put them together. [He indicates to DAS to place his spread right hand against the palm of OB's left hand.] Now you have a slightly shorter index finger than your ring finger. That's kind of normal for men. Mine is quite a bit shorter than my ring finger. The reverse—the index finger much longer than the ring finger—is very common in women. In a situation where you're looking at someone's hand, you have to think, "Okay, is their hand anything like mine? And would it look like what mine looks like when it functions?"

Yours I would have expected to work pretty much like mine, these are quite equal in length. And in fact with the size of your hand, the finite difference between these fingers is not much. That's a good piano hand.

DAS: You wouldn't know from the way I play piano. [OB laughs.] It was the old practice problem. You have a longer little finger than I do. [Places his left hand against OB's right.]

OB: This is funny, but you'll see if you discount the nails, this one ends a little below that tip joint. [He compares his right little finger with the position of the tip joint of his ring finger.] Right? And this one [on his left hand] actually looks a little bit above. That's partially from stretching and bending in certain directions all my life. You never get to look at any of these things in a vacuum. By the time someone is an adult, they've developed a musculature that will be slightly different.

Yours is pretty normal. But occasionally you run into someone for whom the conventional advice would not be of any use. They would not gain anything because their hand is so structured differently.

In addition to structure, some hands function slightly differently. That's comparatively rare. More commonly, simply because of accidents of development, people will have learned to think to their hands in different ways. They tend to bend from a certain point first. Many people who develop dysfunctions in their hands, it's not only a result of, say, plucking with the tips of their fingers like that. Sometimes it's the fact

that they subtly tighten this joint [he indicates the tip of the right index finger] before they begin moving the others. The basal ganglia of your brain are organized in such a way that coordinated motion usually comes from proximal joints and then out to distal joints later. And if you begin by tensing a distal joint before a proximal joint, there are quite a number of physiological consequences that can come from that. So that's what this is based on.

Training the Fourth Finger

I want you to do this for me. Essentially the way this exercise works is this: Let your fingers relax, and see if you can get second and fourth fingers to poise over the sixth string at the same time. You will find that you'll probably need to relax your shoulder, let it fall inward, until these two fingers with their disparate lengths operate similarly on that one string. So that, for instance, you work here [demonstrates with his left hand at the fingerboard], and your second finger comes down on its tip and the fourth finger comes down sort of flat. You have to be somewhere where they operate pretty similarly.

Now there's an asterisk that goes with this: it applies if, and only if, you need to use your fourth finger. There are many schools of players who just don't use their fourth finger at all. But their particular idiom doesn't require that they use the fourth finger except in chords. Just as an example, if you watch someone like Eric Clapton play blues, he does it mostly with his first three fingers. And he very rarely uses his fourth finger. The result would be that you'd have to judge his technique in a totally different way. He's simply operating with only three quarters of the fingers, and he's actually learned an idiom in which that works fine.

DAS: I think he's handicapped his chops a little bit.

OB: Yup.

DAS: There is a very, very good bluegrass guitar player and mandolin player, Josh Williams, who plays with the Tony Rice Unit. And you probably know who Tony Rice is.

OB: Sure.

DAS: That's pretty darn good. I don't think he uses his little finger very much. There's a YouTube video where somebody asks him, "Why don't you use your little pinkie?" And he [said he] never thought about it. And he's another guy who's self-taught. I think he is not using all of his resources.

OB: So would I. But again, when you define your own idiom and your own style, the classic example is Django Reinhardt. There are

now quite a bit of little fragments of film [of him playing], all available today on YouTube, I'm sure. When I was a kid I'd heard about that but I'd never really seen it. And now that I've had a chance to look at it and think, damn, that's really quite interesting. Neurologically, I think only two moving units for the most part is very interesting. In a certain way you can see the simplicity of it is desirable, while it also limits other things that you can do.

Adduction Exercises: Keeping Fingers Perpendicular to the Fingerboard

A presupposition I have is that you want to use your fourth finger as much as possible. And part of the game is becoming supine enough in your forearm such that the longest and shortest fingers will play perpendicularly to the plane of the fingerboard. It is fairly easy to get these [fingers] one fret apart and adduct the two of them. We can learn thereby the use of the adductors. Most of us, when we first start, we stretch with our fourth finger and abduct a good deal. I get a good deal of pale discoloration over there [he points to the hypothenar eminence of his hand] which marks an interruption of circulation, the fingers get all spewed, pockets all white over there.

But also, two other things happen. We lose leverage in that finger because we're wasting some of our energy leaning outward along the string. We lose effort in friction that is counterproductive; that's the tension that is counterproductive.

Likewise, it takes a certain amount of time to amass the force to cleanly get that note held, and if we were able to put it down straight like this, we could get on and off faster.

DAS: All that I subscribe to. One question: Now, perpendicular means that I would be depressing the string with the tip of the fingerbone, rather than off to the side of the pad?

OB: Yes, I think you should be pressing pretty much on the tip, and I think the line that you get if you press and hold like this should be parallel to the nail—if a straight line can be said to be parallel to a curve.

DAS: Like on the middle finger but not the little finger.

OB: Now as we first begin, most of us have more of our callus on the outside of those fingers and less on the center or the inside. And we are in fact trying to learn to play on the center of the finger.

DAS: Yes, as perpendicular as possible, which means I will probably be landing directly below the tip of the bone.

OB: Mm hmmm. And that means you have to be prepared—es-

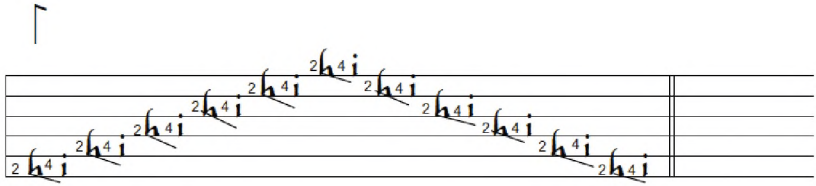
pecially on a steel-stringed guitar—for your callus to migrate a little bit. If you start without waiting for that, sometimes you get on an unfortunate place where you just don't have enough callus to play comfortably.

DAS: And bruising bone?

OB: Yes. You have to take this rather calmly. That's why I say you need to do these exercises.

Now watch. You go up the neck to the smaller frets which are closer to the center of your body as well. You relax your shoulder and allow your hand to become as supine as is comfortable. For many of us that's very difficult because our musculature is not used to letting us hold that loose. [Play] somewhere around the seventh or eighth fret.

And here is the beginning. You start on your fourth finger, or I should say, possibly even break this down further. Press [fingers] 2 and 4 down gently a half step apart and squeeze them toward each other such that they actually squeeze slightly in, underneath the intervening finger, just a little bit.



Exercise 1: Static adduction.
Adduct fingers without plucking. Hold to count of four, then release. Shift to next string. Using the fourth finger of the left hand, poise second and fourth fingers over the sixth string.

Yes. Good, stay there, two, three, four. Release that, please. Shift to the next string and do that again, just one string lower, not one fret lower. Physically lower, I should say. Everyone does that at first.

Wrist Position

Figure 12a. Faulty wrist position.

Aha, right now this [pointing to DAS's wrist] is bent out quite a bit. I'd like to unbend that slightly. And that will involve—watch me—this sort of rotation where your thumb might be quite a bit higher than you think, which it will be if you're playing only on the bass strings. If you were doing a passage only in the bass strings, your thumb would appear over the top of the neck slightly.

DAS: So bring it down like that, you mean?

Figure 12b. Wrist position corrected.

OB: Yeah. Somewhere in between, where this is slightly bent [his finger indicates DAS's wrist bone]. You're thinking your fingers go outward this way and you're trying to get 180 degrees of bend approximately. Watch. There, toward the neck. Most of that bend is in the middle joint. A little bit is in the outer two joints, the inner and outer joints. You don't really want to be in a position where for instance you are 90 degrees in any one joint. But this is probably the best joint to be using most of. Now, let go.

Release your fingers and don't straighten them out, just release them, and shift over to the next string, and put them down again, and adduct them there. It's a different matter to adduct at different parts of the neck with your thumb in different places. So we're actually talking about how to do this in different places. Hold, one, two, three, four, release. Shift slowly to the next string, press down, and hold for count of one, two, three, four. That is to develop your adductive muscles.

By the way, your adductive muscles are here [pointing to the base of the fingers] on the palmar side of your hand. Because this one [the middle] goes in here, and in fact the ones that bend this back and forth [pointing to base of middle finger on the back of the hand] are both on top. You can see the adductors in this segment of my hand.

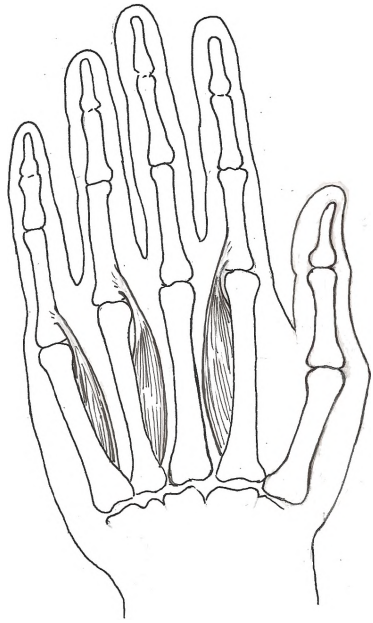


Figure 13. Adductor muscles. Drawing by Andy Rutherford.

DAS: I can see those in your hand. [Facetiously] Those biceps.

OB: It's the only well developed muscle in my body. [DAS laughs.] A lot of theorbo, electric bass, long-necked instruments are [responsible for that? The comment is unintelligible.].

So you're holding them for a few seconds and warming up those muscles, concentrating thoughts to them and demanding blood of your brain. If you do this each day as you begin to practice, your body, Pavlovian animal that it is, will start to think, "Oh, I send blood to this, this, and this place, let me begin to flex." That is, adducting.

O'Brien's Library and the Continuo Collective

DAS: [Looking up at OB's bookshelf] That's a Goëss lute book there.[2]

OB: Yes. And up at the top that's the one page of Bianciardi's 1607 Siena publication of continuo, the first continuo book. It's only one page long.

DAS: Is it actually an old one?

OB: No, it is a print from a scan made years ago. We give those out to our little continuo study group, the Continuo Collective, it's called.[3]

Nobody in universities in New York has a collegium that generally deals in early 17th-century music. They tend to have the odd Baroque programs that start at 1690 or 1700. So some of our students decided to put together an early 17th-century Italian specialty group. It's met on Tuesday nights for about 12 years. They pay money and hire a couple of teachers and put on a program each semester. Last week's was scenes from Monteverdi operas.

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[2] I discovered this lute book among 14 lute and viola da gamba manuscripts from the 17th and 18th centuries in 1979 in the private library of Count Leopold von Goëss in Ebenthal, Carintha. See Douglas Alton Smith, "The Ebenthal Lute and Viol Tablatures," *Early Music* 10, no. 4 (October, 1982): 462-67. Facsimile editions have subsequently been published by TREE Edition in Germany.

[3] The Continuo Collective is a group formed out of the Mannes Collegium in 1998 to explore the rhetoric and performance practice of accompanying vocal music from the 17th century, directed by the lutenist Grant Herreid. Patrick was instrumental in the founding of the group and was the resident lute expert on the faculty until his death.

DAS: I've played in two of them. Bob Lundberg built me a fabulous theorbo, you may recall, a copy of his own antique Magno Graill instrument made in Rome in 1635.[4] Unfortunately it was just too big for me and eventually I had to sell it. David Rhodes has it now. He's just made a recording with it, it's quite nice.[5]

OB: I haven't run into David Rhodes' name in years, that's fascinating.

DAS: He's repairing instruments down in North Carolina. He contacted me and wrote, "I may have your theorbo," and sure enough, he had bought it from the person I had sold it to. He plays the instrument quite well and it sounds fabulous on the recording. BOOM, go those contrabasses.

OB: Very interesting.

DAS: I played it in 1977 when Philip Brett organized a concert of the Monteverdi Vespers for the meeting of the International Musicological Society at Cal Berkeley. And then later in 1977 or in 1978 at the University of Munich, the music department's Baroque ensemble performed the *Combattimento di Tancredi e Clorinda*. I came to Munich on a postdoctoral fellowship with that theorbo, thinking it would probably be the only one in town and would get me into any group I wanted to join. Sure enough, the director Rudolf Nowotny was glad to see me and that instrument. I still have friends from that group.

OB: There was a time in that era when a person would tentatively put in an order for a theorbo, and people would start to call him, hearing that he had ordered one. They would ask, "Can you play in my opera next year?"

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[4] Robert Lundberg (1948-2001) was a lute maker in Portland, Oregon. His 280-page magnum opus, *Historical Lute Construction*, was published posthumously in 2002 by the Guild of American Luthiers (Tacoma, Washington). See in it the "Introduction" by Douglas Alton Smith, which is a synopsis of Lundberg's research on museum lutes and his teaching of lute-making courses in Germany. See also Lundberg's seminal article, "Sixteenth and seventeenth-century lute-making," in *JLSA 7* (1974): 31-50.

[5] David Rhodes (June 14, 1941-May 17, 2016) was a longtime cardiology researcher in Boston but also luthier, composer, and lutenist who taught at the 1976 LSA Summer Seminar. His CD of mostly 17th-century Italian music (Castaldi and Corelli) featuring himself and other musicians appeared in 2012 under the poignant title ". . . *dead, I sing sweetly*" . . . *Aesops* (CD Baby).

Adduction Continued

DAS: OK, so we start our practice every day by proceeding through these six strings and placing 2 and 4 on adjacent frets. Where should my thumb be? I see that it hasn't been listening to the maestro and it wants to bend.

OB: This is very easy to describe in a certain way. This is terribly easy to do if you're Italian. You put your hand like this [shaking his supinated hand outward, thumb and middle finger tips together], like Italians. It's a gesture. It never goes like this [holding his left hand with wrist perpendicular to the neck]. By reason of the strength of the finger or whatever, your arm has to be right smack underneath it, which in fact is where you want your arm weight to be because you want to be working a good deal with the weight of the arm rather than just the muscle tension of the fingers.

DAS: So I don't want this [holding his left elbow out toward the peghead]?

OB: Right, exactly.

DAS: So that is a very fundamental posture.

OB: Absolutely. Your arm weight is going to be a plumb line straight below the middle finger pretty much. Your thumb is somewhere between the middle two fingers.

DAS: Okay, so this [he stretches his left elbow out left]. I just created some dysfunctional tension.

OB: Yep. You are tightening muscles in your shoulder and neck.

DAS: If I learned nothing else, that is worth the trip.

OB: Keep that stuff out of the equation, all of your deltoids and your trapezium and stuff like that. Don't do that.

By the way, a great change in anatomical insights in instrumental technique came with a publication some thirty years ago of a book called *The Anatomy Coloring Book*.[6] Which is a great advance for our purposes over *Gray's Anatomy*, for instance. They have these little pages that tell you, "Here are the muscles that move this part of your body." Color them all one color, and so on. And you really do get quite a good picture of your brain and what's going on.

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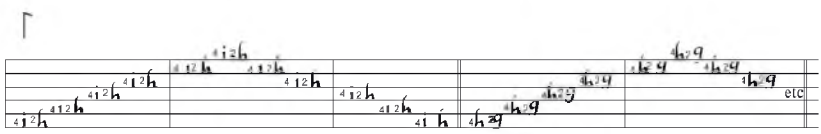
[6] Wynn Kapit and Lawrence M. Elson, *The Anatomy Coloring Book*. First published in 1977 (Harper & Row). *Gray's Anatomy*, originally written by Dr. Henry Gray and illustrated by Dr. Henry Vandyke Carter, was first published in England in 1858 and is still in print. The most recent (41st) edition appeared in 2015 (Elsevier). Illustrations from the 1918 or earlier editions are often seen on the internet since they are out of copyright.



Exercise 2. Dynamic adduction in half tones.
Continue on progressively lower frets to the first two frets. Then repeat using fingers 3 and 1, and finally 4 and 1. Eventually repeat the cycle with whole tones.

Once you've actually squeezed those two fingers together and warmed up the adductive muscles, you would like to play descending intervals of a half step from the center of your body outward. It's an important aspect of this. You play 4-2 on each string. And you're trying to adduct each finger as you put it down—a reasonable amount. In fact, you can see this later on in your film, watch: [he demonstrates]. You're trying not to abduct it. It's not so much you want to overdo the adduction, you just want to turn off the abduction. The advantage of adducting is that it enervates with abduction and it turns that function off. If you lean inward slightly, you lose the dependence on abduction.

Now, there's a very careful element I need to describe right here. You're starting with enough supination of the forearm—[extends his forearm and demonstrates] pronation, supination—so that the two fingers are over the same string at rest, wherever that angle is for you with the length of your fingers. And you press down 4, adduct it, and then press down 2. And as you press down 2, only that one finger moves, and you release your fourth finger and only that one finger moves. You're trying not to pick up several fingers at the same time. Just relax that one. At that moment, your fourth finger, if you've set it right, is still over the sixth string. And you will want to shift slightly from your elbow to go to the next string. When you do that, you get the best possible purchase on that in terms of perpendicularity and use of the impact of your finger.

On the new note, you haven't got as good a leverage on that note any more, but that note is only sustaining. And if you let go of that note at the moment you pluck the new one, it will curl back where it's supposed to be. It will come automatically back to the next string, and it follows you without being told. So you simply move once and all the remaining fingers come with you.

Likewise in the other way back up, it's really run by your arm. So it's an exercise that's about adduction, but it's also about shifting across the neck, and about having the best leverage on whatever the initial finger on the next string is. I try not to say "on your first finger" because the

first finger that does the next thing is not always the first finger.

[DAS follows the instructions.] Yep. Shift now, and your thumb will move. So it'll move when your fourth finger moves, not when your second finger moves. Shift now, yes. You may find that you're used to doing this, moving the finger over and then shifting for the second finger on the string. Ideally, the sooner you shift, the better. Good. Let your thumb come higher up if it needs to. It can peek over the top of the neck. Yes, that's your fourth finger . . . into the right place. [As DAS practices the movements] Shift . . . shift.

Now, it's harder to go back up in the other direction toward the bass because shifting up against the back of the neck is kind of hard. You're going uphill across the neck there. You have to check yourself if you get to the sixth string and say, "Okay, I'm still pretty perpendicular on those fingers." You shift down a fret and do it again on a wider fret, slightly wider, which is likewise further from the center of your back, of your body.

Yes [watching DAS do the exercise], shift. So every time you shift, you feel a little bit from the elbow, you feel gravity pulling your arm toward the floor, and your thumb is dragged along, which works differently on different kinds of necks on different instruments. If you had only six courses on the lute, and the back of the neck were a deep, elliptical curve, you simply wouldn't have to shift very much to get the span of six courses. Again, the early six-course lutes have six courses in about the space where today we would put five strings. If you had more courses, the back of the neck should be flatter so you could maneuver more easily back and forth, as you would on a baroque lute, generally.

Smoothing the Back of the Neck

If you wanted to shift around comfortably, one of the best woods to have on the back of your neck is oiled ebony where you can shift quite easily. One of the worst finishes is a spray lacquer. When you find people who shift around the neck quite a lot, you'll find frequently they've taken a piece of . . .

DAS: . . .very fine sandpaper . . .

OB: . . . Yes, sandpaper or steel wool and softened up that finish. You'll find that heavy metal guitarists who do this a lot actually have a matte finish on the back of the neck because it functions better.

DAS: I asked an old friend of mine who'd studied classic guitar what to do about that, and he said exactly the same technique. But with

a $12,000 D-28 I sort of hesitate.[7] Though it ain't worth twelve if I can't play it.

OB: Walnut, ebony, anything like that just has oil on it, moves very easily. It is something that the classic guitar world has been very conservative about taking on, whereas pop guitarists all know about sort of softening up the finish on the back of the neck so that it can make all these shifts more easily and not get stuck on a finish.

DAS: I was concerned about it a year ago when I first started getting back into this again, so I popped this question to the old friend of mine who'd studied classic guitar on and off for many years. I think I'm probably going to do that because otherwise I'm going to be fighting the grip, the thumb is going to be opposing my will.

OB: You have to learn to use your arm weight lower and your thumb pressure less, such that you're more free to move around. But the material and the shape of the back of the neck are going to interface with the repertoire of that instrument in such a way that ideally anything that's existed over a long period of time and reached this stable configuration—a certain number of courses on a certain shape of neck, and a certain repertoire to go with it—heads had figured out how to put all of those elements together in the best possible way. And occasionally when you find out here's a certain whole strain of Panormo guitars made in Italy, in London in the early 19th century, and here's the repertoire they played on it, and here's the technique they played on it, you come up with why the artifact that survived was built the way it was. You find it actually serves this particular need.

There's a wonderful book, oh God, I'm not going to be able to remember this, it has changed title over the years. It was at one point *The Design of Everyday Things*.[8] It was a study of how different artifacts were made and why they function the way they do.

Adduction Further Down the Neck

So, if you were to do that exercise, ideally over a period of time, you would gradually be able to play a few frets a day at a better speed and get down to the bottom of the neck where those frets are wider. The

[7] The rosewood-body D-28 Dreadnought guitar was designed by the C. F. Martin guitar company in 1934. The Dreadnought model continues to dominate the company's production to this day. Because of its strong bass, it quickly became the preferred guitar for accompaniment in Appalachian and later in bluegrass and many country bands. Like so many instruments, including lutes, older and rarer examples tend to be worth substantial sums.

[8] Author Donald A. Norman.

healthy way to begin with that is to start with the half steps and do that.

There's a thought about adduction. In physical therapy people tend to say you can't overdo adduction. It's an ironic way of putting it, but if you adduct too much, you run into the next finger. So you can't really overdo it because you have a natural limit. If I were to ask you to cultivate abduction, you could push your fingers outwards until you tore a muscle or tendon, until you put unreasonable torque on the joints. So there's a sense in which certain activities are safe to give to someone and you can say, "Well, you can't really overdo this one."

Likewise if you start on the small frets and keep moving, eventually playing the notes as you go, working your way down the neck, you're occasionally in touch with where your shoulder is and where you're shifting to and where your thumb is. Don't lock yourself in one position and do a thousand repeats in one place since then you may not be able to move your hand the next day.

Exercises which are designed in a sort of peripatetic way are very healthy in that sense. They don't stand still for any length of time. If you are able to do that, you could go at some point up the neck and probably manage with almost the same distance a whole tone somewhere. Then if you try to get that whole tone adducted and shifted and it worked, you could say, "Well, then I'll do it as a minor third somewhere up the neck." Guys do this on electric guitar and jazz guitar as they move high up here. Then work your way down the neck by stages, starting with all half steps, at one point getting half steps down low and a few of the small whole tones higher up the neck. And then doing all the whole tones, and then doing gradually wider intervals. It depends on what your repertoire demands.

Modern classic guitar repertoire demands unreasonable stretches all the time, and so you try and find a way to learn to play ridiculously wide major third intervals or the like with two adjacent fingers.

One of the reasons why clawhammer banjo technique works the way it does is that it is designed by and for people who did hard physical labor most of their lives and had to use a very economical batch of very simple motions in order to execute their playing.[9] They couldn't keep a phenomenally arcane technique going by working on very, very, very difficult, all unnatural huge stretches and whatnot. They had to make the technique out of the simplest motions you could manage, even if you had plowed the back forty today.

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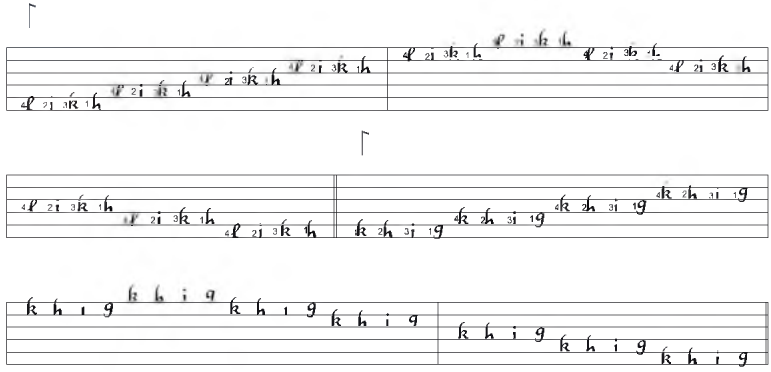
[9] Clawhammer, also known as frailing or knockdown style, is a traditional technique for

Post-Addduction Exercises



Exercise 3: Adduction scales with four fingers.
Practice adducting with the first permutation of fingers 4-2-3-1 across all six strings and back, then move the sequence gradually down the neck one fret at a time. Repeat with the next permutation, until all 24 permutations are fluent.

4231	4312	4132	1432
4321	4213	4123	1423
3421	3412	3142	1342
3241	3214	3124	1324
2431	2413	2143	1243
2341	2314	2134	1234

Once you have managed to figure out how to do the adduction and the pairs of fingers, the next step is to use them in a normal disposition in the way we normally play scales. For instance, you could start up the neck on whole tones and play 4, 2, 3, 1 [he places his little finger on

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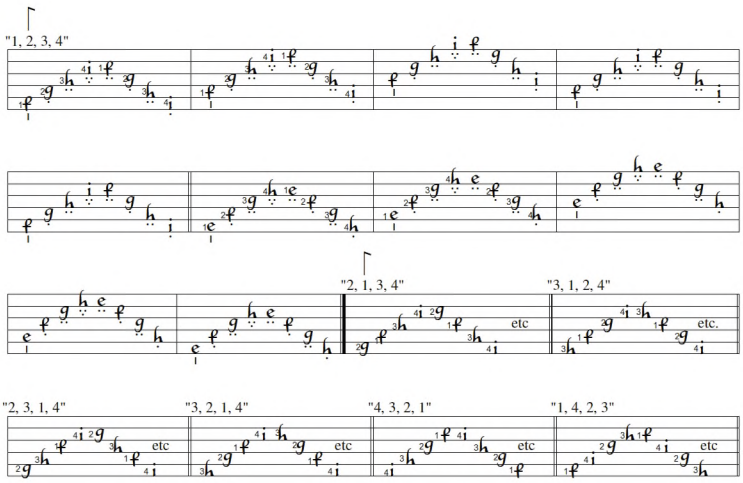
playing 5-string banjo. For the right hand, the player's wrist or lower arm provides most of the momentum. The four fingers are curled about 180 degrees to allow the fingernails, not the pads (except for the thumb), to pluck the strings. The fingernail of the index or middle finger plays a melody tone with a downstroke on the string. The wrist pulls back upward, and then strikes down again so that the middle and ring fingernails can play an alternating downstroke, brushing across the top two to four strings on the offbeat. As the wrist lifts from the strum stroke, the thumb plucks the unfretted fifth string on the last 16th note of the quarter-note value. Left-hand fingerings are typically fairly simple. 8th/16th/16th is a typical rhythm. playing 5-string banjo. For the right hand, the player's wrist or lower arm provides most of the momentum. The four fingers are curled about 180 degrees to allow the fingernails, not the pads (except for the thumb), to pluck the strings. The fingernail of the index or middle finger plays a melody tone with a downstroke on the string. The wrist pulls back upward, and then strikes down again so that the middle and ring fingernails can play an alternating downstroke, brushing across the top two to four strings on the offbeat. As the wrist lifts from the strum stroke, the thumb plucks the unfretted fifth string on the last 16th note of the quarter-note value. Left-hand fingerings are typically fairly simple. 8th/16th/16th is a typical rhythm.

the 10th fret, the index on the 7th]. Try to get all four of those fingers to land straight. You've discovered that while you've worked on 4 and 2, you've worked on 3 and 1. You've probably managed those. Then it's a quick extension from there to say there are 24 permutations of those four fingers, 24 sequences in which one might do it. The normal mathematical symbol for that is 4 factorial. That's four with an exclamation point [4!]. You realize that you'd like to land equally on all four fingers and be able to shift, no matter which finger begins or ends on a particular string. Adduct them all with your hand nicely. Get yourself poised over each string with all four fingers. You're making permutations of those four fingers scale-wise.

At some point when you use a sufficiently sophisticated chord repertoire, you realize you might want to do those permutations across the strings as scales. I made up exercises based on that forty years ago, for myself.



Exercise 4: Adduction arpeggios.
Repeat on successively lower frets till the index finger is at the first fret. Then repeat with the remaining 23 left-hand fingering permutations:

1234	2134	3124	4123
1324	2314	3214	4213
1342	2341	3241	4231
1423	2413	3412	4312
1243	2143	3142	4132
1432	2431	3421	4321

Right hand: p-i-m-a-m-i-m-i for each 8-tone arpeggio sequence.

I tried them out on a few friends and the most advanced guitarists who had studied internationally looked at me and said, "Yeah, we all do that, what else do you do?" I thought I'd invented this permutation system. Well, it turns out that a number of people were doing this as far back as the turn of the 20th century. Because it was wickedly atonal, they never actually put it in a book, but they taught it to students, and those passed along from one to another. For instance, Alice Artzt had studied with Ida Presti in Paris, and she was a great player but also a really, really good teacher.[10] Ida had thought of a lot of these concepts, and people in more sophisticated circles had thought of them before. So I was kind of reinventing the wheel in a way. I went away thinking, "Well, this is nothing I need to show people. It works for me, but I guess everyone knows this."

But if you were to begin with the six permutations that begin on your fourth finger, you begin by thinking, "I need to favor my fourth finger in the basic position of my hand." Whereas when I first practiced scales on classic guitar, I started with fingers 1 and 2. It would be more valuable to think about 4 earlier in the combination, because I cannot actually make that finger any longer than it is. This affects the sequence of fingers as follows. If you put 4 on the string and try to get these half steps that begin the exercise, you'll notice that by the time you get 4 really comfortably straight up on the string, frequently, if you relax 2 enough, it will be out here over an imaginary seventh string in the bass, because it's that much longer. And in fact you have to return the long finger—and perhaps it straightens up a tiny trifle—as it goes down. Rather than planning around the long finger and then flattening out the other finger, you are going to start by favoring the shorter finger.

DAS: That makes a lot of sense.

Flexion and Release

OB: Of those 24 permutations, the ones that begin on 4 work very, very well. Likewise you realize if you did them scale-wise, almost anyone can go up from one finger to another pretty quickly, whereas most people don't move down this smoothly. And again, beginning on 4 would be useful, thinking of this moment when you put down your third finger and relax your fourth. And there's not a moment where 4 comes off before 3 is down. There's a split second where they're both touching.

[10] Alice Artzt prescribes similar exercises in her manual *The Art of Practising* (Musical New Services Ltd., UK, 1978; re-edition Westport, CT: The Bold Strummer, Ltd., 1993).

And if you do it correctly, when you put down 2 and then release 3, 3 will release but 4 won't come further up in the air. Your goal is to have only the one finger release that you're currently using, not to pull them in the air like that. [He demonstrates pulling up a finger.] You've poised your fingers just over the string. You flex them to press them down, and to let them relax and come off the string; you don't actually use your extensors to pick them up. You simply stop flexing.

So, you're using one system neurologically, flexors or not flexors—flexors, not flexors, extensors, not extensors. That's a four-part system that's very hard to manipulate.

So, here we are. Ideally it should look something like this [he demonstrates as in Figure 14].

Figure 14. Fingers poised over the strings.

It should not ever do this [he demonstrates shifting the hand out of parallel with the fingerboard] when it comes off the string, or off into the air progressively higher and higher, or my arm moves.

Figure 15. Faulty hand position.

Those are all extensions from the adduction exercise to a four-fret wide permutation system and then eventually two. They extend to all the other permutations of the four fingers, or whatever's appropriate for what you actually need.

How much [technique] do you need? Well, when I came up with this as a thought, I played a concert in which I played two of the Hans Werner Henze *Royal Winter Music Suites*. One was one half of the concert and the other was the second half of the concert. And playing really bitchy hard, even in those days contemporary repertoire in the Sixties. And I realized that I needed really phenomenal facility that I would not need for playing folk music, or I really don't even need for playing Baroque guitar music.

It comes back into play when you want that facility to play the most advanced [Silvius Leopold] Weiss. Because he's got a four-fret wide position that he can avail himself of, it's really fluent. And you realize that you just have to get over all of those fingers as well as you can.

And suddenly, the Weiss A Major suites and similar pieces become more possible than you had ever thought. The really, really bitchy keys—even they become possible on fairly long string lengths, with some reasonable limit. I have a copy of a Jauch, I think it's 74 cm, and that's like the screaming limit of harder Weiss.

Robert Barto at the 1984 Toronto Guitar Festival

Even Bob Barto, who has chops to burn, decided he needed 70 centimeters. He needed to get shorter to play the really, really hard Weiss. He's about the best I've ever heard play that. I first heard him play at the 1984 Toronto Guitar Festival where they had this crazy idea of a lute contest, and they invited some people to be judges.

DAS: And he won.

OB: And he won. Well, Toyohiko [Satoh], and Paul [O'Dette], and Ray Nurse, and I, and Juergen Huebscher they asked to adjudicate, and a few other people. I thought I would die before he got through the first suite he played, it was just so exciting. By the time he ended the *Gigue* I thought I would have a heart attack. I'd never seen anyone attempt any fast movements in Weiss at full speed. Really pretty incredible. He had a volume on the order of the kind of touch that Michael Schaeffer had—he had studied with Schaeffer at one point—window-rattling volume that was half again louder than anyone else in the competition played. And he was on a clearly nondescript baroque lute, not a very good one, that he had bought used and had been cobbled together a couple of times. That was astounding.

None of us had much experience judging anything like this. Then Toyohiko came up with this idea that was brilliant: we would give Barto the first prize, and we wouldn't give a second and give a tie for third, which could have been, on the order of how well he played, could have been a tie for 23rd. No one was anywhere near it. It was astonishing. Bob plays Renaissance lute very well. That's the last time I think I ever heard him play Renaissance lute in public. They came up with the idea that performers were required to play Baroque lute and Renaissance lute in the competition; you had to do required pieces on each one. And it was astounding to watch him play.

DAS: Let's continue with this. But now, can I take you to dinner?

OB: I don't have another student till 7:30 tonight. And I intentionally left the day sort of open ended.

DAS: Have you ever been to Anthony Bourdain's restaurant? You know who Anthony Bourdain is?

OB: Les Halles down the street here? Yeah, I've been there but not for years. We could go anywhere. I suppose a really serious restaurant opens at 5 or 5:30 for dinner. I don't know when they open.

DAS: Les Halles is open straight through.

OB: Is it indeed? You've already done your research. So let us do that, we'll take a break.[11]

Session Two

Right Hand: Relaxing the Fingertip Segments

OB: We are quicker if we use a bit less of the fingertip segments which cocontract with their antagonists. So frequently when you're trying to give someone more speed on the classic guitar, or what have you, you ask him to try to pluck in a way that allows the tip segment of the finger to hold back as far as it is willing to do with his particular fingers. That angle is different for each person. And to try to do most of the work from the middle joint and/or the base joint of the finger so as not to learn to trigger the tip of the finger first. That likewise presses the string down which creates more volume. The top of the instrument moves like a drum head, and if you can depress the string and allow it to pop up, you get more volume than if you push the string to the side with the tip of your finger. And it predominantly moves across the top. The top's not very flexible horizontally, it's about a foot wide that way, whereas it's only a couple millimeters thick. So you want to get the force that drives the string down, and you want to get out of its way. So that works actually quite well by using predominantly the big joints of the finger.

As you press into the string and press through the string, there's an inexorable moment of release where you feel the string start to skate over on your fingertip and you know it's about to let go of your finger. And in effect you have to concentrate on relaxing at that very moment rather than intentionally pulling into the finger's motion and then coming out. If you let go as soon as possible, it will eventually return in a blur where you can't quite see it return. It just falls back outward, using the big joints and relaxing as soon as possible.

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[11] Anthony Bourdain is a chef, restaurant owner, author and television personality, the host of past or current culinary and cultural adventure programs on the Food Network, the Travel Channel, and CNN, as well as frequent guest appearances elsewhere. Pat and I talked about Bourdain's hilarious restaurant-insider exposé book, *Kitchen Confidential*, which both of us had read. At about 4 p.m., we walked a few blocks from Patrick's studio to Bourdain's Brasserie Les Halles. I remember that we ordered beef dishes and a bottle of red Burgundy, much of which we consumed, saving a portion for Patrick's wife Mary Lou. Needless to say, our mood was quite convivial during dinner and the following lesson session.

For instance, if you were to do an etude which involved alternating the fingers, you would want one finger to relax immediately before you even played the next. The only time when they look like this [he alternates index and middle fingers back and forth] is when you're going very fast, and simply the relaxation of the first finger you pluck with is happening while you're moving the next finger in.

But if you were to take that etude very slowly, be it an arpeggio or a scale etude, you would imagine each finger would not relax completely before the next one played. Cultivating the quickest possible release gives you the possibility of using that finger again as soon as possible. The quicker the release, the quicker you can recycle the finger, the faster you can play. I'm going to relate that in a moment to that sort of squared curve concept.

Playing from the Large Joints

In fact you absolutely operate your hand quite well already, you just want to sort of organize it and know exactly what direction you're going. Let me speak about this.

If I relax the tip of my finger as I encounter the string, and don't tighten it on the way to the string, this happens: I get passive hyperextension of the tip joint. You don't need to do that as you play. Some people keep that tip joint somewhat firmer than that. But what you're trying to avoid is beginning to move from the tip of the finger, as this would be, triggering that tip first. If you do this, you reach a point where you're actually in that position I was describing as being a square.

One of the groups of people I work with who've done terrible damage to their hands were people who were signers for the deaf, who in legal, medical, and other kinds of applications had to sign very quickly, under great stress. And if they were good enough at it, the way they signed actually betrayed the actual emphasis of the person who was speaking. They were translating and then translating back. And they would overuse their hands in certain ways. And this kind of form [he presses his index finger, tip relaxed, against the tip joint of his thumb] is a certain symbol in sign language, and this curved sort of form is different (see Figure 16). And literally, they had to find themselves doing certain forms or motions which might have been well enough designed for the speed at which sign language was originally designed to work, but suddenly now in the modern world, you just couldn't drive it that hard.

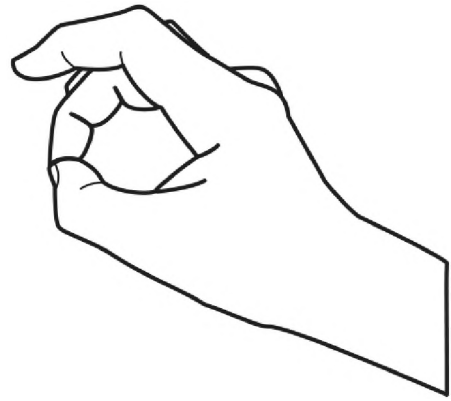


Figure 16. Sign language finger curvature. Drawing by Elizabeth di Guglielmo.

Well, in any case, if you were to pluck a group of strings, you would have a usage that caused a variety of fingers to relax in the tip and to drive through from the other joints. Once you have learned by doing this, say, in an etude, to relax the tips and drive from the big joints, probably even if you moved absolutely carelessly, you would still do a majority of the motions from the big independent joints and very little from the tip joint. It's not a question of all or nothing, it's the exact proportion with which you trigger the motion in each of the three joints.

Were you to do what I was asking for in the thumb, that way or this way [he plays rest stroke on the sixth string, then a free stroke where the thumb leaves the strings after plucking], you press down on the string and you pull sideways, adducting the finger. So you're flexing downward, with mostly the base joint and the middle joint, and then you're pressing in and pulling sort of sideways with the adductive muscle in the web of your hand.

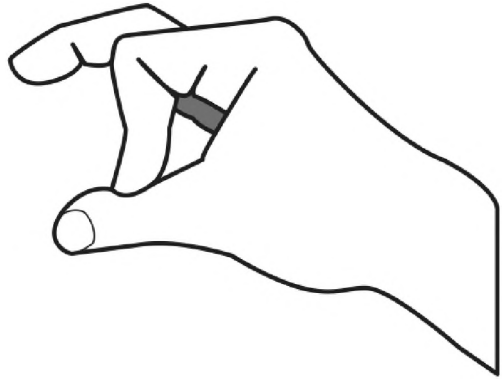


Figure 17. The Square, Patrick's term for a sign language sign. Drawing by Elizabeth di Guglielmo.

You can do that with a pick as well. Essentially what you're trying to avoid is that [he demonstrates curling the tip of the thumb inward], which is just so stressful.

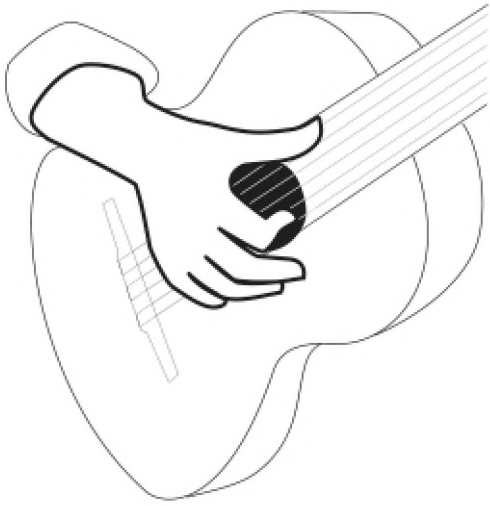


Figure 18. The Square while playing guitar strings. Drawing by Elizabeth di Guglielmo.

In the end, where you do that, you would end up with something that looks a little bit like this, and again, it looks a little bit like a square I use to operate a pen or pencil, as opposed to the circle that would be so stressful.

Left Hand: Quick Release for Speed and Practicing with a Metronome

Now you have a basic strategy for how to use your hand. For instance, suppose you are doing this thumb-index finger alternation on one string, and you have learned to do that quite well and get in that square sort of idea when you are first traveling from one finger to another in any of the basic exercises we talked about in the left hand. You would well do a further technique while you pluck each note several times, and you were actually practicing quite a quick transfer from one finger to another. While you were practicing that quick transfer only every fourth note, you were laying the groundwork for moving faster later because you were working on a quick transfer but not constantly.

So, you're trying to sequence this motion in your right hand with how soon you get the new finger ready in your left hand, so that when you change fingers, from 4 to 2, for instance, 2 is already down just before you play it. And at the moment you play, you're just relaxing 4 rather than picking it up in the air. You can take that up to any amount of quick, almost tremolo-like playing with a couple of fingers, and it's quite easy once you get this to work, to say, "Oh, I can do it that way, or at that speed."

And if you slowly work up from a lower speed to a higher speed, an irony of working on high speed is that you work at the low end of the metronome. I have a metronome program that I put up on the screen of my computer at home. It ran from 40 to 400 when the developer put it up on my screen. I wrote to him and I said, "Could you make it go lower?" And he said, "Sure," and he sent it back about five minutes later, and it went down to 1. I said what I want to do is increase the number of notes I do per click. If you start at 40, it's well below your heartbeat. If you were to go up to 80 you'd be playing twice as fast, but you'd be sort of pushing yourself in a certain way. When you get up to 80 you want to back it down to 40 and do twice as many repeats per click. So you're learning to subdivide against a beat rather than to simply, how shall I say, multiply the effort. You're learning how to divide it. It's a better way to learn to play, say, divisions. Rather than kicking the metronome up and getting it all the way up to 400 where you're playing one note per click, you'd rather keep it down low, below the level of your heartbeat if possible, and increase the frequency of divisions you do per click.

Some people have great difficulty doing the release quickly. When they do it they get a lot of extra motion. For some of them the release is so alien that you have to make a fuss of making them practice the release, to realize that a fast scale or fast division of notes is actually, in a certain way, neurologically a quick set of bursts jammed close together. Whereby you would say a fast legato scale is actually a staccato scale squashed together. Each individual motion involves releasing as fast as you can. If you learn to play staccato at a given speed [he demonstrates], you get this kind of staccato just by releasing the left hand quickly. I'm not muting with my right hand. I'm getting this in my left hand just by letting go quickly. When I do that, I have released this quickly enough that I could actually probably play twice that fast once I've gotten it down. And there's a moment where you practice any order of fingers, the downward ones are harder than the upward ones. Try and make them at a given speed, on a metronome, more staccato. And at some point you realize you could do it at twice that speed. Eventually you realize you could do it at twice *that*

speed. I don't normally play this way but I'm conditioning what you do with fingerpicks, with thumb slightly outward.

DAS: I see, so it's a process of developing the release, the quick release then.

OB: If you listen to anyone play divisions really quickly, if you were to slow it down enough with a recording studio program, you'd realize that there is a good deal of silence between each note, that they were very brief notes. And again, like drawing a smooth curve on graph paper, if the points you plot are very close together, it looks like a very smooth curve. Ironically, you begin to be able to hear that many people who play scales fast are actually releasing a little earlier than they have to, and that regardless of the speed, they've actually retained a quick enough release that they could even play faster than that if they had to. It has to do a little bit with that sort of thinking that you keep the metronome down low, increase the number of divisions per click, and that you retain as much quick release in your left hand as possible. But as you release, at no time do your fingers go high in the air.

I've used this method quite a number of times with students. The first time I did it I remember I got someone to do this because she had to play divisions in a class that was doing dance, and she was going to have to play this in Elizabethan consort pieces, and she didn't get anywhere near the speed, she felt, to get through it. And I made her work on that for quite a while very methodically from one stage to the other: very slow staccato motions, then doubling that speed and comparing staccato-ness of slow notes where she was letting go of the notes at about a quarter of the value of each beat. And she realized if she did that, she could play at that speed, doubling the speed and then doubling it again. When after 45 minutes or an hour of working methodically through that, she actually tried to play one of the divisions, she began to giggle because she realized she could play so much faster with little effort. Her initial reaction was to be giddy: "Oh my God, I didn't know I could do this," that she could fire off these various fingers so independently and so distinctly.

There's a style of motion that happens when you do this staccato technique, which is very interesting to describe neurologically. When you kick a ball, or punch something, I suppose, there's a moment where you have many fibers in a muscle, and you want that muscle to drive a limb into its highest speed as quickly as possible. So what you do neurologically is you fire all the neurons that control all the fibers in that muscle at once. And what happens is that you have a sort of explosion of contraction of fibers in the muscle, and it sets the limb in motion at incredible

speed. It's still accelerating as it hits whatever it hits, with tremendous force because of the acceleration. But actually by the time you hit anything—kick the ball, for instance—you've actually let go of all of the neurons, turned them all off, and you're just getting the natural follow-up and response of that burst of energy. That's called ballistic motion. It's kind of like an explosion.

And that kicks in at a certain time when you're trying to play fast enough, where you have to know how muscles operate. Here's a point about muscles operating. They operate digitally and not in an analog fashion. If you have 100 fibers in a muscle and you want 50 percent of its power, you have to completely fire 50 percent of the fibers. You can't fire 100 percent of the fibers each halfway. Muscles don't work that way. You trigger 50 percent of the fibers, and you get fifty percent of the power of the muscle. It's either on or off. All of those go on completely and the others don't.

In your eyes you have the capacity to fire almost individual fibers in each of those tiny muscles, and move them in incredibly delicate ways. There is a neuron per fiber. In your gluteus maximus, you have maybe one neuron for 300 or 400 fibers, which means you don't operate that as delicately, but if you had to jump out of the way of a speeding car, you have a kind of leverage where you would fire a few neurons and a lot of flesh would move, and you could jump really fast.

There's another parameter that goes into that, which is the percentage of high- and low-twitch fibers—fast- and slow-twitch fibers—that you have in your muscles. There are people who are born sprinters, and they have quick twitching fibers in their muscles. They tend to be explosive jumpers, whereas a person who has a predominance of slow-twitch fibers tends to be a long-distance runner.

Some people train for speed in different ways depending on how their muscles work. In plucking strings we're working on such a tiny amount of energy that it sort of doesn't matter. But at a certain point where you're using ballistic motion at high speed, it's as though it's leaping into motion as I'm triggering my fourth finger. I stopped triggering it, but it's going to hit the string and I'm going to pluck it right at that moment and it will let go right away. It has in a certain sense already started to relax before it hits the string. And if I can sequence that properly with exactly the same activity in each successive finger, I can move incredibly fast. But I have to have so much independence between one finger and another that I can trigger the second finger totally independently of what's going on in the first finger so as to create a variety of different speeds.

I like to say to students about this that the more thinly you can slice relaxation, the faster you can go. It's a question of learning to relax incredibly quickly. With many people who don't have high speed, there's a moment where they're trying to get to play at quite a moderate speed for a while, and measure their progress over the days, then a day comes when they can go at that same speed but with much more staccato notes. And at a certain point it becomes, once they learn to do that, quite easy to do it twice as fast or even four times as fast as that. I haven't practiced this in years except on lute, which is quite a different animal, but it works the same way. Likewise, this is a good way of training that gesture [flexing and releasing the left-hand finger] to happen in exact synchronization to what happens in your right hand so that they hit the string at exactly the same time.

Very often people will have a right-hand/left-hand coordination where, if you were to line it up with some of the really sophisticated tools that we have now to measure muscle motion, you'd realize that it's quite approximate whether the right hand hits the string with the proper force at exactly the time the left hand is down. It's actually nanoseconds off to one side or the other.

Day Two

Proximal Muscle Groups

OB: In general, in physical training, it is wise if not essential whenever possible, to have someone arrange to learn what to do with the larger muscle groups before the smaller muscle groups, to learn what to do with the proximal muscle groups before the distal groups. Whereby when I ask people to work on plucking, relaxing the tips completely and using as much of the other joints as possible, I'm trying to establish that the first joint they trigger is the most proximal joint involved, rather than stiffening a distal joint before they begin moving anything else, and that moving distal to proximal is part of the choreography of most major practice-induced injuries for musicians. You have to develop an eye for it to watch how people practice or watch how people play because it happens so quickly. It's very hard to say just exactly what are they triggering with just one note. It's very possible for somebody to be playing 8, 12, 16 notes per second, and you're trying to figure out what's going on.

So you start with simple training that tries to get them to move from the big joints. And that applies very much to the motion of the left hand as well. In general, one does as much as possible of the pressing

down of the strings from the base of the finger. One has the option of selecting which string, mostly from the middle joint of the finger. There is a division of labor to an extent, between a kind of strong or gross motion and a kind of more delicate motion that frequently is done with no weight on the finger. You're choosing this string or that string, and then you're finally pressing down. And you're choosing with the middle joint, and you're pressing down with the base joint.

You have a choice of different systems to use in every activity. Your body's made up of—to put it very, very generally—light and dark meat like a chicken. You have muscles in your eyes that have many neurons per fiber that are meant for learning delicate manipulations. You have dark meat—we would call it red meat in terms of white and red muscles—that are meant for comparatively gross motion. There's quite a continuum. These flexor muscles which move your fingers are delicate and have a lot of neurons per fiber. This has less [he opposes his thumb and little finger], that has less [he rotates his lower arm], and these have less [he lowers and raises his forearm, then raises and lowers his elbow], progressively as you go down through the core of the body.

Kinesthetic Memory

And you could train yourself to use gross motion in order to locate a string, with enough repetition and a good enough kinesthetic memory which some people have to an amazing extent. Most virtuosi have kinesthetic memory, which is somewhat on the order of photographic memory or perfect pitch. It's a virtually perfect muscle memory, and it's so little recognized by the public that there's no popular name like photographic memory for it. A perfect muscle memory, what would we call that? Well, many people, athletes, what have you, have a great deal of that.

Quick story: Paul O'Dette, when he was in high school and junior high played golf, and he was quite good at it. He was pretty much a scratch golfer in high school. He got to go to the University of Ohio on a golf scholarship at one point. He didn't play for ages and ages: he went into music, and he never thought about golf again. Once at a fundraiser at Eastman, he met the sportscaster for the local TV station, who said, "You're a sports fan, why don't you come out to this Pro-Am event that we're doing for charity this weekend and play a round of golf with me and some guys." And Paul said, "I'd love to, but my clubs are at my Dad's house. I haven't played in 25 years." This guy lent him a set of clubs. Paul went out to a practice tee, hit a few shots, and was only a few strokes over

par when he finally got through the round. It's not like he would hit the first shot perfectly. He'd hit several, and if he got one that had the right feel to it, he could memorize that one and say, "Okay, six iron, like this" [makes a motion as if moving a golf club with his two hands]. You can't do that in a competition sport or a contact sport, and you couldn't do it on a playing field, in hockey, or playing basketball, but you can do it in the kind of sport where you pretty much get to sit quietly and recall the motion and reproduce it.

I was not surprised by that story when he told me because I know perfectly well that he has a pronounced kinesthetic memory. He doesn't have to do things in the most efficient way possible in order to do them quite accurately. For the rest of us, we try to do our best to train delicate motion into very sensitive muscles and gross motion into gross muscles so as to have the best chance of being able to reproduce that accurately. If someone has decided to move his shoulder like this, to move his upper arm [he raises his elbow so that the lower arm rotates], in order to find a string crossing on an instrument, first it takes perhaps a hundred times as many repetitions as possible to remember that because of the basic difference in the sensitivity of the muscles.

Stage Fright

Certain muscles fail, when they're nervous, before others. There's actually a pathological reason for some kinds of stage fright. If you look at a 19th-century novel, there's a moment where someone's teeth chattered and stuff happened when they're supposed to be nervous. They give people a dash of brandy, which dilates the capillaries. When one becomes nervous, we have a very ancient instinct to constrict the capillaries in our extremities and near the surface of the skin. The blood is forced to retreat to the marrow of our bones and our central organs. Your skin becomes pale. What happens at that moment is that certain muscles, which require a good deal of oxygen, begin to fail. That's when your muscles that you're standing on, which require a lot of oxygen, start to fail and your knees knock forward. You'll be sitting there with your classical guitar, and you put your foot on a footstool, and you'll feel your leg shaking when performing.

If you have trained yourself to use those red muscles in your technique, you're really screwed because your body knows that what you're going to have to do in this situation is very likely to fail, it can see it coming. Unconsciously it knows that it has not got enough control to do something. If you can train that activity into the right muscles and

joints that have more sensitivity, that are more aware of where they are, you may well still be nervous in a certain way, but it won't have as many physiological consequences. The result being after a few times that you played fairly well, you don't become as nervous any more.

The same thing, by extension, works with people who have, let us say, a modest kinesthetic memory. We don't have perfect pitch in terms of our muscle usage. Therefore we have to do everything by what we would call the physiological equivalent or proprioceptive equivalent of relative pitch. I'm holding this and I know if I move that far [he simulates moving his left hand down one string on the fingerboard], the next string I want is so far away from the string I'm on. And I'm doing this adjustment with certain muscles and feeling it in certain joints which have more receptors attached to the brain.

Asterisk. There's a kind of cell in the lumbrical muscles that manipulate mostly this joint [he points to the index MCP joint], the kind of cell called spindles.

Those muscles that manipulate the joint of the base of the finger are very rich in those kind of cells normally. And to oversimplify greatly, they function like an onboard computer. As this finger moves from there [his index moves from the base joint], I can feel how it's moved and adjusted without having to actually send the signal to my brain and back. It actually is capable of readjusting itself from here [he points to the MCP joint of the index] quite a bit quicker than having to get the signal to my brain and back, as fast as that is. It's the speed of light, probably. In fact, you can adjust from certain places in your body because the muscles or the places where they're attached to bones, for instance, have sensors of their own which can regulate motion on the site. So the choice of one muscle or another leads me to say that I would like to develop use of the proximal joints first and integrate the smaller joints or the distal joints later, or gradually, with an eye toward keeping gross motion and fine motion separate and trained into the kinds of muscles, joints, and sensors that do each one of those tasks well.

DAS: OK, is that more or less a summary here? Let's turn this film segment off and then we'll start my hands-on education, as it were.

OB: Absolutely.

Practicing

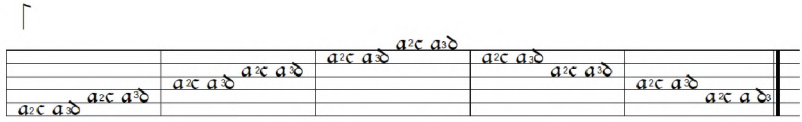
DAS: What I'd really like to know, after I've developed that adduction exercise, is how do I practice it? What are the principles of practicing it? We start very slowly so there are no mistakes, for one.

OB: Yes. While I'm thinking about playing in first position like this, it's difficult because, as I said yesterday, it's a basic tenet of this kind of exercise, moving from fret to fret such that you loosen up your shoulder, your elbow, and you test everything at the moment of relaxation. This is part of an embryonic thinking about it. I think you would take these exercises very slowly, watching very carefully that nothing else is happening, such as putting that finger down with an extra motion, recovering it from somewhere else, or extra motion in the arm. And you would do one repeated motion all the way across the strings and back. That's the safety valve, that you would move from string to string and possibly from fret to fret. I believe you would always start from the bass. Most people put their fingers down quite nicely, quite vertically in the bass, whereas when they get to the treble [he moves his hand to the treble and lets the wrist pull the fingers away from the fingerboard], all sorts of things happen.

DAS: My thumb's placed too high.

OB: And so in general one starts in the bass and moves toward the treble and does these [exercises] quite repeatedly on maybe several different frets, within the first five, six, or seven. Ironically, unlike the classic guitar, you don't start up here in the high register [he holds his hand above the seventh fret] and work your way out. I have a feeling you start at this end of the neck, next to the peghead.

DAS: OK, let's try one.



Exercise 5: Warmup and orientation on low frets.[12]
Repeat on each string several times before moving to the adjacent string.

OB: I want you to play open string, fret 2, open, fret 3 across the strings. Ask yourself when you begin, "Are my other fingers right over this same string?" The secondary question is, "Have I moved them to there, or were they just there when they relaxed?" And that's quite a question.

[12] Patrick conceived this and the following few exercises on lower frets as especially appropriate for folk guitar, though in his mature pedagogy (after the late 1970s), he tended to begin an exercise in higher positions when teaching a lute or classical guitar student. The slur exercises below are also designed for folk guitar, though Silvius Weiss and other baroque lute composers use the slur frequently, and it does not seem to me inappropriate to practice them. Slurs are far less typical of Renaissance lute compositions.

There we go.

Now, your thumb is going to be pressing approximately under your second finger, or under the middle of your hand, something like . . . there you go. And you would say, if you took the neck out, if the neck didn't intervene, probably the second finger would meet your thumb somewhere near the bone at the base of the first joint right there [he presses his middle finger to the base of the thumb tip joint].

DAS: That's a little high, isn't it?

OB: No, not really, but it's somewhere in there, it depends a little bit on your hand, it depends a little bit on what posture is most conducive to combining with the other chords and the rest of the idiom you play. I think if you're playing only on the bass side of the neck, your thumb actually does start to peek over the top of the neck. I can almost, just barely see it, and I think that is true.

DAS: I'm thinking though, that if it's there, then I'm going to be stretching particularly with the little finger, I'm going to be coming in fairly obliquely.

OB: We're just using 2 and 3 at this point.

DAS: Okay. So I would have a different disposition for 2 and 3 than I would with 4?

OB: You would have a different disposition for 4 if you were trying to make all four frets. Right now we're not. We're sort of doing what folk guitar does. This is what will happen: as you get to the first couple of strings, you'll actually use 4 there [on the third or fourth fret, second string.]; 3, 3, 3 [his third finger on the sixth, fifth, and fourth strings, third fret]; 4, 4, 4 [he places his little finger on the third fret of the third, second and first strings, successively].

DAS: Okay, the point was that my thumb is going to have to be lower to bring 4 up into position.

OB: Mmm hmm.

DAS: So that's why I was inquiring. So in other words, my wrist position will not be the same always. It will be constantly changing?

OB: Probably not. It will not always be the same in this kind of exercise as it would be if you're aiming toward classic guitar, jazz guitar, playing almost universally in the high positions. That's a different sort of ball game. I have a feeling this is going to be playing within a chord repertoire that asks you every now and then to twist [your wrist] a little bit for a chord here or there. I'm trying to build a safety valve in there.

DAS: Yeah, typically for the folk, for bluegrass, I'm going to be down here at the first five frets.

OB: And rarely even then when you're going to the fifth fret,

rarely are you going to stretch four frets wide. Frequently you're going to do things here [he demonstrates shifting his hand up the neck a fret or two], but they're only four frets, or three frets wide. And I'm aiming at that.

DAS: So only when I get fairly advanced that I'm up here, doing single-line work . . .

OB: . . . Then you go to the other format, the other kind of four-fret exercises we were discussing yesterday. So right now this is the concept that I'm just developing gradually.

So, 2-3, open, 2, open, 3. Again beginning with open strings so you can observe your fingers at rest. And see that nothing dysfunctional happens. The easiest possible one is open, 2 and then open, 3. Right. Do that several times, then move to another string.

DAS: [Practicing.] I'm trying to think little finger, too.

OB: And periodically shift, yes, to another string and do it several times there. You're trying to keep 1 and 4 independent of what's going on there. As you're progressing, 1 and 4 are gradually staying more still and that is absolutely your goal.

DAS: Do you want me to continue with 2 and 3?

OB: For now let's do that, yes. I think the first stage of an exercise needs to be quite repetitive. And it shifts every so often so you don't strain your muscles. [DAS continues to follow instructions and play.] Hold a moment here. Relax your fingers but stay in position. Is your first finger truly over at least as usable a fret, over the right string, as your fourth finger? You check yourself every now and then and see, for instance, has this happened [OB shifts his hand so the MCP knuckles are not parallel to the fingerboard], which normally happens with people? That they're sort of at a little bit of a tilt somewhere and are not really in the same position they were in on the sixth.

DAS: I can't see it.

OB: Yup. Maybe have a mirror.

DAS: Should I be able to see the fingerboard?

OB: No. Don't need it.

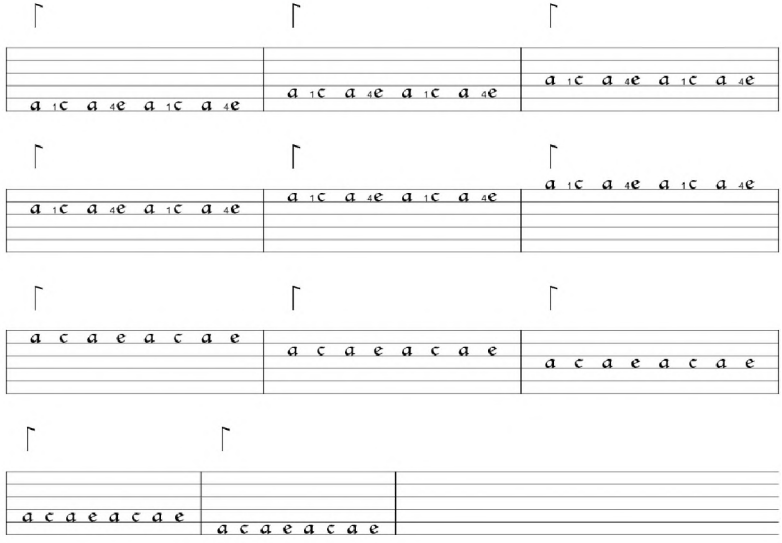
DAS: Should I be able to simply look around and talk to the audience while I'm playing?

OB: Yep. I looked at several videos last night just for fun. I looked at a video of Tony Rice playing a fairly fancy solo and talking over his shoulder to someone, giving directions to someone else in the band, you know, like telling who's going to play on the next verse. Whatever it was, he was talking to someone while he finished the solo. It was all just happening over here [on the fingerboard]. He was clearly able not to look.

Looking is an interesting situation for students on various levels. When someone is told to look away from the piano keys or what have you too early in life, too early in their pedagogy, they don't really develop a very accurate picture of what they're doing. Later on when they are looking away, looking at music or their fellow players or what have you, some image in the back of their brain that is clearly very visual has to be imprinted whereby they picture what's going to happen or they know what that picture is, even if they're not looking at it. So I always tell people in the beginning to let themselves, for instance, to tilt the lute back a little bit and keep an eye on the fingerboard because they have to kind of learn the fingerboard, learn the configurations, and learn where they're going, although that's not necessarily the most efficient way of actually playing. At some time you will not have to look, but you will have to have gone through the process of looking.

Asterisk: Some people rely more on their aural memory and not on their visual memory. It depends a little bit on how people remember things. It's so different from person to person. You can almost tell someone who gets lost easily and was told too early in their piano lessons as a child never to look at their fingers. It would have been a nice little first couple of months when they should have looked at their fingers, till they had a visual memory of where they were going.

Now, do that with 1 and 4, please—1 and 4, a whole tone. The very first 4 you put down, you moved your arm for it, and the next one you didn't. You saw it and you fixed it.



Exercise 6: Warmup and low-fret orientation with fingers 1 and 4.

DAS: I didn't even see it, I just fixed it.

OB: The very first one, it looked like this in the beginning, watch: [he demonstrates shifting the arm slightly]. There was just a little bit of motion, not as big as that. The next one, you just moved the finger. That's one of the elements we're looking for, more individual motion of the fingers. The big, badly circuited, dumb red muscles are going to stay in the same place. You're not going to ask the dumb muscles to get us on and off the string at high speed. You're going to do that with light muscles. A chicken stands on dark meat. It flies with white meat. [DAS continues, fluffs a note or two.]

You're helping with your arm a little on 1. Wait, wait. When you go for 1, picture this angle; look at my hand [demonstrates moving the index from the MCP joint]. This angle here, that's what's supposed to be moving.

DAS: My thumb, it looks like my thumb is still pulling

OB: It may well be. We often do this.

DAS: Is it wrong, or what?

OB: I'm not sure if that is causing the motion or not. Let me just do a secondary thing.

DAS: If I twist a little more, it has less tendency to do that.

Slur Exercises

OB: Slurs are a part of some idioms and not of others. Slurs are a very small part of bluegrass guitar, you don't do a lot of slurs.

DAS: Oh, I would.

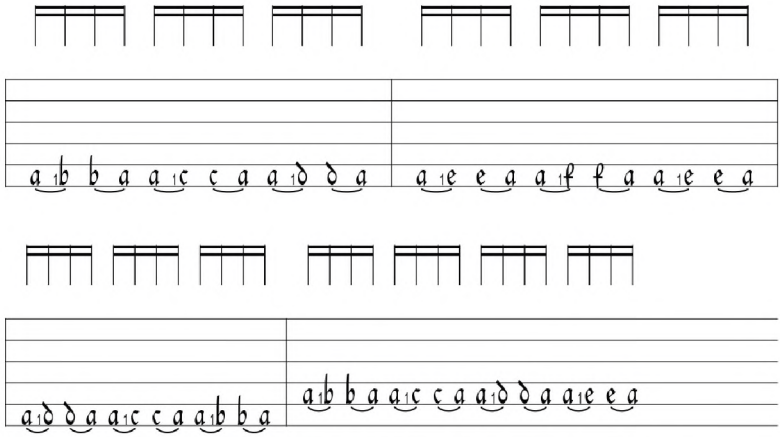
OB: A few now and then, but there are not passages of long groups of slurs, the kind of slurs that you get at the cadenza of a Piccinini piece on theorbo, where you have to do as many slurs as possible through a section.

DAS: If you can do them, if it would amaze or amuse the audience at that spot, you do it.

OB: [Laughs.] In general, it's kind of a hard-driving idiom, and most of the notes are plucked. But it's very useful to practice slurs of a certain kind to overcome the problem you were just speaking of. To land with a finger on a slur without moving the arm is actually quite difficult. There are exercises that we do for that, which are quite useful.

DAS: I'd like to know them, both for hammer and pull-off strokes.

OB: Sure. Try this one.



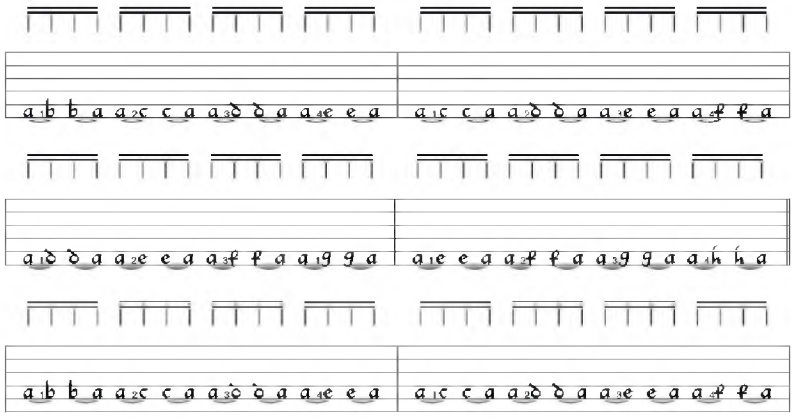
Exercise 7: Slurs on open strings, Step 1.
Slur up and down a fourth chromatically using only the first finger. Repeat on each string till the first, and then again back to the sixth string. Then repeat this sequence with the second, third, and fourth finger successively.

You'll notice I played the bottom note and slurred down with my first finger. [He demonstrates.] Try that. Play it two times. Slur upward, and then slur down [= hammer stroke and pull-off].

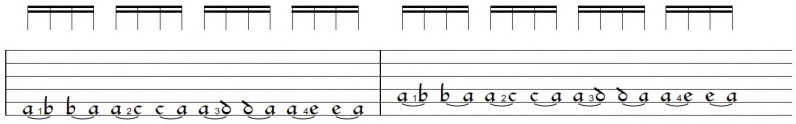
On various fingers, you'll see that you'll find yourself doing either that [he pulls with the lower arm so that the neck moves] to help a finger down, or that [he pulls the arm and neck downward] to help a finger off. And you don't want to move your arm. If you move your arm, you're going to have to recover from that in order accurately to hit the next finger in the passage. Finger number 1 is noticeably bad at slurring for everyone, 2 is a much better slurring finger. And many, many times in history people would take the trouble to shift to somewhere just to get to 2 so they could slur. It's a longer lever, a broader surface, it does the slur better.

In essence, one of the traditional exercises is doing slurs like this with one finger, going from string to string. You're trying to get that finger to move all by itself. Once you've done that across the strings and back, you could do it with each other finger, which is Step 1.

Step 2 would involve integrating the various fingers, and not necessarily doing these all the way up the neck but on the first few frets.



Exercise 8: Slurs on open strings, Step 2.
Continue to fret g or h, then shift to the adjacent string.

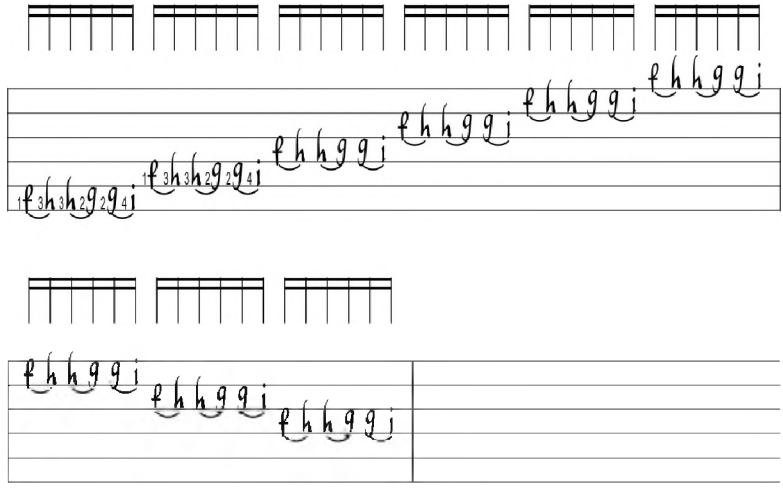
When you're up the neck you're usually slurring from finger to finger. In first position you're slurring from or back to an open string. I just did that on the sixth string, I did all four fingers; I moved up a fret and tried to do it in several places on that one string, went to the next string, and so on.

Exercise 9: Slurs on open strings, Step 3.

Step 3 is to move right across the strings without shifting. And you want to be able to do that without moving your arm or hand.

It was quite a trick when I discovered I wanted to do that, and I tried it and I found it worked much better, but wow, I had to pull the elements apart and break a lot of old habits where on certain fingers I didn't trust, I helped with my arm. Sometimes I think I was helping with my arm because when I was out of position, it was abducted [he juts his elbow out towards the peghead and abducts fingers]. And given two or three deficiencies in other areas or tempi, I probably had to help with my arm. I just couldn't get it done from there.

So that's a common slur exercise. By the way, here's something I remembered in the middle of that. When one does a slur exercise in a

four-finger exercise like we were speaking of yesterday, all these permutations—1-3-2-4 for instance—I might well do those with slurs. And you'll notice that whenever I slur 3 upward [from 1 to 3], I let up on 1. Hopefully, it doesn't go in the air. But I take the weight off the back finger. That makes it easy to get to the next note, especially if I don't know what the next note is going to be.



Exercise 10: Slurs between fingers.

Finger Relaxation

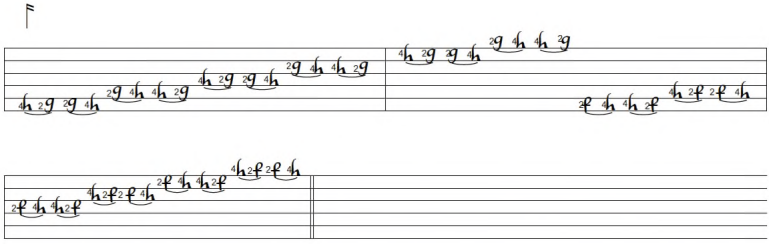
A lot of classic guitar technique requires relaxing the fingers. Many people need to sight-read in a professional situation, or improvise as in playing continuo, or improvise in any other way. There is not necessarily one version of a piece that you memorize and always play it exactly the same way with the same fingering. If you take the entire musical history and the entire musical experience in the world, playing the same piece from memory over and over exactly the same is pretty rare. Almost no one does that. That's not the way people make music, mostly.

So anyway, you should learn to relax in certain situations because you don't know what the next note would be. I would avoid holding one finger on the string until the next finger comes in or alternating fingers in a very rigid way. What should happen is that the player lets go of the finger that has just fretted the note, the whole system is as relaxed as possible, and the finger would be ready to play immediately afterward.

Adduction and Slurs

DAS: So I do the slurs, up and down the strings. Is there anything else to be added on the slurs?

OB: Several things. One of them is that when you ask people to do slurs, it presupposes that they already have their basic posture together and they have gotten the adduction of the fingers such that they land square on the middle of the fingertip.



Exercise 11: Adducting fingers 2 and 4 on slurs.

Frequently it can be very useful to aid the adductive exercises and to aid their absorbing the habit of adducting, in a variety of situations, to do it with slurs and learn, when you're only dealing with two fingers, to release the back finger, to shift, to adduct, all together [he demonstrates as he speaks]. Many people actually do profit from putting slurs into some more elementary exercises like this. There's actually quite a bit of advantage to be gotten from doing these up the neck where in fact the strings are basically higher. And the sensation of coming down really squarely on a finger is quite poignant, because you're actually pushing this finger down from quite a height.

So that's another possible view to slurs. When you work with someone week after week, you begin to see that a certain part of their development needs to happen before they get to the next exercise that could work. You will knit one exercise into another for some particular sense of balance that they need at that moment. So how many ways do I teach this? Let me count the million ways: it's probably as many people as those I've ever taught. Just as the vocabulary is kind of odd, you discover that you ask someone to push something, to use a word, and he will come back to me doing it successfully in a week and say, "It's not pushing, it's pulling." So then you will say, "Do that pulling thing." You use the vocabulary that works for him. You would like him to understand, especially if he teaches, what actually happens in terms of physics, sci-

ence, neurology, and physiological mechanics. But if he's only going to be a player, all he needs to know is what works and what it feels like and that he can get back to that if he loses it.

Example of Bjorn Borg

Bjorn Borg, the big tennis player, had a classic skill of putting overspin on a ball to an opponent such that when it landed, it would bounce lower than the opponent imagined. One of the tennis magazines years ago asked him if they could write an article about that, how you get that topspin on your groundstrokes or whatever it was. He said, "Sure." They took a bunch of high-speed pictures with a whole lot of really fancy equipment, and they discovered that if they asked him what he did, he said "I turn my racquet this way and hit the ball." And they discovered that in fact that wasn't what was happening. At the end of the stroke, he saw his racquet pulling back, and he thought, "That's what I'm doing." But it turned out if you look at the whole stroke really carefully, when he intended to do that particular stroke he took the racquet back a little bit more low, brought it up diagonally. And because he had done that, it turned over at the end of the stroke, that's what he saw. But it was the diagonal trajectory that actually made the overspin. They had a really serious meeting at this tennis magazine. They asked, "Should we tell him that?" When you mess up what goes on in a nanosecond in an athlete's head that makes a successful attempt at something, you could be messing up a really important picture that he can access quicker than anything else.

I told this story in a lot of classes years ago. I used to ask, "Does he need to know that?" Eventually someone would say, "Yes, perhaps if he teaches." And at some point I said that many of us actually inadvertently copy in an air-guitar way the body language of our teacher. And in a sense, maybe the player doesn't need to know that, and the teacher doesn't need to know that, let me just pick it up without thinking, very much the way you play popular music of any kind that's usually done by imitation. You watch someone play and try to do what he does. And you actually don't realize the myriad things you pick up from him in terms of body language as to how you do it. You try and look like he does.

Fingerpicks and Flat Picks

[OB is examining DAS's thumbpick.]

DAS: [Taking and putting on the thumbpick.] OK, actually I

found that if the tip is quite long, then it's an extra stretch for the brain.

OB: There was a time years ago where people who desired a certain sound would point the pick more or make it narrower, or make it shorter. And every particular player had his own way of cutting his fingerpicks for what he wanted. Sometimes you find that this [touching DAS's thumbpick tip] punched out too far, and people will file it down so it just sticks out a certain amount.

DAS: I've just been adjusting these while we were talking, trying to get them down so they were fairly close, but that may work. What I've been trying to do is get the volume and the tone of the flat pick, but preserve the lute technique that I already have, to build upon it.

OB: A few years ago I saw on TV—I don't know who this person was, I can't remember now—but he was a bluegrass player and he played banjo and guitar both with fingerpicks. And he would play very good solos with fingerpicks like that. He had an Aguado-like technique in that he had a stand of some kind that his banjo sat in. He would play guitar, and when he wanted to, he'd put the guitar behind him and walk over to the banjo and play a really good solo that way.

DAS: He plays together with his wife?

OB: Whoever this was, he played quite well both ways, one of the first times I saw someone play really good solos in a flatpicking style with his fingers.

DAS: I know who that is, in fact I just bought his book. He was the first great five-string banjo player in The Country Gentlemen, the Washington, D.C. band.

OB: Oh yeah, I remember their recording so well.

DAS: Ed Adcock. He picks the guitar and he plays it with banjo technique. Now he doesn't get the guitar kind of tone, he gets kind of a banjo tone out of the guitar.

OB: Yes, but it was still very good playing, I thought. There's nothing that matches, for me, live, nothing that matches the tone Doc Watson gets. Which is brilliant sound.

DAS: Pretty darn good. Awfully nice singing voice too.

Flatpicking

OB: When you start on flatpicking, many people start with their pick approximately flat to the string going across like that [he demonstrates on the steel-string, flat-top guitar]. And when you hold your pick flat, more or less, to the ground [which is slightly diagonal to the guitar as OB is holding it, neck angled upward], you have a downstroke that actu-

ally works on the front of the pick, and an upstroke that works mostly on the back of the pick. You get sort of a rounder, fuller sound depending on how you've cut the point, how thick it is. Rather than playing this way on the flat of the pick, you play sort of on a slight diagonal to the string, which is what all the old mandolin players used to do. They had tortoise-shell picks, they had a whole different sort of response.

DAS: So you recommend striking at a diagonal?

OB: Yes. And you do get through more quickly. I've done this a thousand times. This sort of flatpicking technique where, like Jim and Jesse,[13] that cross-picking on the mandolin where you play, no matter how you're crossing the string, you play down, up, and down. And I think people who hold their pick in a certain way, move so smoothly through the string that they can avail themselves of a whole different variety of alternations and arpeggios, but it wouldn't work for other people who are kind of catching on the flat of the pick as they come across.

DAS: Let me grope through it as long as we're on that, and let me try it and see how I do it naturally, I hadn't thought about it. [DAS puts his fingerpicks down and takes the flat pick].

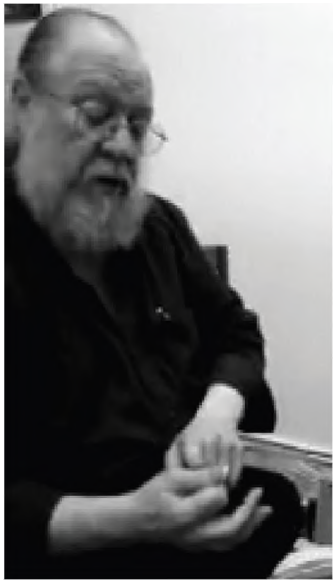


Figure 19. How to hold the flat pick.

[13] Brothers Jim and Jesse McReynolds together with string band members The Virginia Boys played in a style similar to Bill Monroe and Flatt & Scruggs from 1945 until Jim's death in 2002. Jesse, the mandolin player, is still active in 2017. He became well known in bluegrass for his "cross-picking," an arpeggiated style which Patrick briefly describes.

OB: I have a technique that I learned from someone, which is to hold the pick kind of like this, without tightening the tip of this finger or without tightening the tip of that finger [the thumb and index, respectively]. I've sort of got it with both the tip joints relaxed. Consequently, since there's no tension in the tip joint of my index finger, my other fingers don't want to hook inward but sort of stay outward like that. Haven't done that in ages, my God. Relaxation of the other fingers is a sign of how relaxed you are.

DAS: I do not play this particular instrument very naturally, I'm up a little higher here.

OB: And you need to be a bit more at a diagonal to the string.

DAS: This is a little higher [towards the bridge] than I usually get into.

OB: The louder you play, acoustically, the more you tend to keep your wrist quite steady and move mostly in tiny movements from the elbow, which cause you to be doing this [moving in small movements up and down with the stiff lower arm]. And this is a bit frozen. It's tiny motions, kind of that way from the elbow.

DAS: This way [with stiff lower arm]? Or rotating the forearm?

OB: The elbow without turning your forearm. You don't rotate on the longitudinal axis of your forearm.

DAS: I have a tendency to do that, I think, naturally. One thing that convinced me that the thumb-under technique probably had a lot of physiological merit back in the 70s when the Striziches first introduced it was that to me I thought it was a lower arm rotation, which you can sustain for a very long time.[14]

OB: In fact it's an elbow motion, without rotating. That actually works better in the long run at high speed. The problem is you can sustain this forearm rotation but not beyond a certain speed. Whereas this [forearm moving from the elbow] you can sustain at incredible speed.

DAS: So I should start playing with the whole lower arm?

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[14] Robert Strizich and Cathy Liddell, "Technique: Thumb-Under Position," *LSA Newsletter* 11, nos. 2 and 3 (April and July, 1976). Paul O'Dette wrote a short clarifying response to this article, published in the *LSA Newsletter* 11, no. 4 (October, 1976). Both the Striziches and O'Dette describe lower arm rotation. Apparently Pat and Paul later revised their opinion on arm rotation.

OB: A good deal of elbow, which again has to do with also playing acoustically. To some extent, you begin to play in the way that makes the sound you want to make. So maybe in a certain style you probably develop a usage that you want. Let me see if I can remember how this goes. I haven't done this in so long. [He takes the steel-string guitar and flat pick and begins noodling with scale and chord patterns.] I can remember kind of, I can zero in on the approximate style. I can't really do it any more because I haven't really done it in so long, but it has to do with the volume and tone of the instrument. You'll be driven to it if you play acoustically with small bands for long enough—you'll start using a bigger weight of your arm from the elbow—whereas so many of us play into a microphone and don't need that huge volume. When I was young I watched an awful lot of players who played old Martins in the South at folk festivals. They played acoustically. And they were playing on medium gauge Black Diamond strings and just awesomely on it. They could just swat out enormous volume, much, I suppose, like watching Django Reinhart playing, making a huge acoustical sound.

There are a couple of old videos of a great hero of mine, Freddie Green, playing with Count Basie, playing acoustically and playing rhythm guitar with the big band. He sat back in the chair, he's tall and thin, he sat back like this [leaning back and holding the guitar almost horizontally]. And if you get the right angle, you can see how far the strings are [above the fingerboard] that he's pressing down, it looks sort of like that. He's got an old, I guess S. S. Stewart archtop guitar, and he's pressing the strings down from almost half an inch high, which is sort of what you have to do if you're trying to play acoustically with Count Basie's band in 1927 in Kansas City, and I suppose that was a standard. We don't have to do that any more, so how much of this leverage do we need? I like the quality of the tone then.

DAS: That certainly may be part of it. I want to know the basics.

OB: We should look at the fingerpicking a little bit, too.

DAS: Let me see, I'm not even sure how I do flatpicking. There's definitely a little arm rotation. [DAS experiments playing bass note and chord alternation as in a bluegrass band accompaniment.]

OB: And if you do it slowly, practicing for speed, you could try using a little more elbow at that point. Keeping your pick at a slight angle to the string and sort of working up to discovering what tone you really want, what articulation you want. The timbral color of that, that richness of the sound always appealed to me very much. It was to me the old sound of the old Martin guitars in the hands of a lot of players I admired when I was young.

DAS: This is a Gibson build, and I've never played Gibsons, so I'm still adjusting.

OB: Where does your hand fall on this instrument?

DAS: I haven't played even half an hour on this rented instrument, so I'm still unfamiliar with it.

OB: You'll have to go back and look at your Martin and see where you fall on that. I play the old Gibsons because I'm mostly a fingerpicker. And indeed I fingerpick with my bare fingers a lot, or with my nails. And I find that the old Gibsons work very well for that kind of blues fingerpicking. The old ones are quite light and you can drive them with quite a bit less force to a very high volume.

DAS: Sometimes some of them have shorter string scales.

OB: I have a suspicion my old [Gibson model] SJ is probably pretty much this size, but it could be slightly shorter than this. Sometimes when I play the guitar just for fun, I try not to analyze it too much.

DAS: So what's my wrist position? Wrist in a straight line and more or less like this in terms of holding the pick?

OB: Tiny action from the elbow. Here's a wonderful thing that ever since 2005 I can do. I could go home and look up a YouTube video of a player playing this way and show you what I'm looking at. Very likely I may end up with Doc Watson because he's a person I've seen all my life.

DAS: So Watson does it right?

OB: Yes, he does it remarkably well. And again, it had a lot to do with swatting out a lot of volume early in his life. [Points at DAS's right hand] That's in a direction that's going really well for that kind of volume. If that's predominantly how you're going to play, you have to figure that out.

Fingerpicks

DAS: Let me get on to the fingerpicks. That is a totally different animal, of course. What I've got here is fingerpicks that curve the opposite way, let's see, they curve in, whereas the dobro's fingerpicks go the other way. So let me get those adjusted.

OB: That's cute [OB admires a Blue Chip thumb pick, metal frame with plastic pick extension].

DAS: That's my dobro thumbpick. Rob Ickes told me, "Get this one," so I bought it from him.[15] And he should know. What I'm trying to

[15] Rob Ickes is one of the premier active bluegrass resonator guitar players, a cofounder of the Blue Highway band, with which he played until 2015. I met him when he taught a dobro workshop while on tour in California in 2011.

do is get so that I have the striking point of the pick as close as possible to the same point that I would be striking [with the bare thumb] if it were a classic guitar.

OB: Interesting.

DAS: And so I bent it forward.

OB: I would be careful not to do anything that encourages you to kind of tighten up there. That looks good, though. Play anything that's simple.

DAS: I'm not used to doing this.

OB: Play slowly for a moment, any simple repetition with a chord.

DAS: I can't hit the notes, I've got adjustment issues. [Plays a 3-finger solo with walking bass and syncopated melody.]

OB: Ironically, the most common finger in playing that way, the finger you hit most often is the index finger. And you're doing that quite nicely, mostly from this joint [the base]. It's really nice.

DAS: I notice that I don't have a tendency to bend the thumb tip.

OB: No. One form I would probably be developing is getting my thumb out to the side a little bit so it didn't ever get in the path of my index finger. When I suggested that you might try playing thumb-index on the folk guitar, [I meant] you can play thumb-index on the same string, and you know you have to develop a situation where the two do not run into one another.

DAS: Well, there is a tone production reason to do that, too [demonstrates pick sliding against the wound string and making a harsh scraping sound]. You get too much of that if you're striking at an angle.

OB: Right. You get this, um, what was I going to say; I'll show you a trick.

[DAS starts playing "Sally Goodin" with thumb-index alternation.]

OB: I've known people who did this [taking Smith's right hand and pointing to the left tip of the index finger]. And what they did was, they beveled this edge like that, so it's almost like a chisel shape. And it caused it to squeak less on a wound string. It's very peculiar. It's a way that a classic guitarist cuts his thumbnail.

DAS: I've thought about the thumbnail business, but you seem to have more strong, thick claws.

OB: I do. I can actually do this on a steel string guitar. I can play electric bass with my nails, which is not always a good idea. A fingernail which has a little flex will give you a brighter sound. I get a very dark

sound when my fingers do not flex at all.

DAS: Mine are very thin, rip easily; there's no way I can play with fingernails. [Plays a segment of the Sally Goodin fiddle tune with thumb pick and fingerpick.]

OB: Cool. Watch what happens when you play certain kinds of styles like this. You'll hear this, certain players do this, I'll slow it down. They sometimes do more than one string with their thumb, especially the bare fingers players, they have a little bit of arm motion [his thumb plays the bass and then again on another downstroke it plays two higher strings, helped by the downstroke of the lower arm]. On beats two and four, they have a sort of a backbeat, a two and four backbeat [plays a fingerpicking tune], driving a little bit this way [he pushes his forearm downward] from their upper arm. [He plays further.] You'll notice I'm not doing that [curling his index tip joint]. And I can drive an awful lot of volume into the string that way. I can do it—I did it here, up higher, like this [playing over the soundhole on his classic guitar], even a little bit more like doing it with finger picks.

Fingerpicks: Conclusion

Have you your other thumbpick there? Not that I know much about thumbpicks these days, and I would need a large one. I'd like to have one that actually plucks not up here [points to the tip of the thumb] but quite far back. And I tend therefore to be able to have my thumb out to the side of my hand and out of the way of my index finger. And in fact when you play thumb-under [on the lute], you frequently want to be quite far on the side of your thumb, further than you think when you begin. Therefore it lowers your wrist and is sort of useful for the rest of the hand as well.

I have a thumbpick somewhere that probably sits not quite that far back [almost to the tip joint], but terribly far back like that. I learned that from five-string banjo players when I was a kid—my pal Ray, who was at that fateful Flatt and Scruggs concert with me ringing the cowbell.

DAS: What was the guy's name?

OB: Ray Harvey.

DAS: So you and Ray Harvey were the ones yelling "Martha White?"[16]

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[16] Here Patrick reveals that he and two New York musician friends are the conspicuous audience members at a very famous concert of the Flatt and Scruggs bluegrass band at Carnegie Hall on December 8, 1962. Pat must have been 15 years old at the time and

OB: Me, Ray Harvey, and Bob McCarthy. Ray Harvey became a professional banjo player. He was a very good five-string player when we were kids, but he actually eventually learned to play tenor banjo, and he worked all over the world doing that. He worked in a lounge somewhere in Las Vegas at one time, playing in casinos with a traditional Dixieland jazz band.

Figure 20: The Back Alley Boys, about 1963:
(l.-r.) Bob McCarthy, Ray Harvey, Patrick O'Brien, Dennis Ferrigno

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very interested in folk music. In his high school years he played in a bluegrass band with Harvey, McCarthy, and Dennis Ferrigno. Columbia Records recorded the landmark concert and issued an LP of excerpts in 1963, *Flatt and Scruggs at Carnegie Hall!*, immediately making the band the nation's most widely known bluegrass ensemble. I have owned that record myself since the late 1960s.

On the first part of the album, audience voices periodically shout "Martha White!" between pieces with increasing insistence. Finally the singer-guitarist Lester Flatt acknowledges the requests, and the band plays and sings a short commercial jingle for the Martha White brand of flour that they sang regularly for their sponsor at Southern concerts but did not expect anybody in the North to know about. There is explosive audience reaction at the end. One can hear the shouts and the Martha White theme on CD recordings still in print (Koch Records, 1998) and on YouTube today. Nobody in the bluegrass world ever knew who those audience voices were, and I had no idea until Pat told me. The most likely ways that Pat would have known the Martha White theme song are by attending concerts or hearing radio broadcasts of the Flatt and Scruggs band in the South. Below he mentions traveling in the South to folk music events as a teenager.

Anyway, I got used to doing this. That encouraged me not to use the tip of my thumb at all but to use my thumb as a whole. And that actually worked very, very well. Likewise, depending on the tone you want—sometimes you want a broader, blunter front surface plucking the string—the more pointy the surface that plucks, it will give the string the force in a narrower area which emphasizes upper overtones. It ends up in what we would call a thinner tone. I used to custom-build them to a certain surface. Likewise, at various angles they would tend to make a little too much noise. And I discovered again that you could make them with a file, a sort of chisel-shape like this, so that the front surface wasn't really rounded: it was kind of sharp and beveled, and you could find a way that it would come across the string without scraping on the windings. Now if I were playing, I wouldn't even pay attention or hear that, but it used to bug me years ago.

Sometimes if I just do the activity for a minute or so, it's enough to remember things. I quite early gave up using fingerpicks because my nails are so hard. I can actually use them on steel strings.

DAS: Lucky you.

OB: Exactly so. It's harder for me to remember what it feels to have a fingerpick on and not the nail. I would now have fingerpicks over nails, which is kind of a precarious way to hold on to them.

DAS: I see. I like the pick concept. What would be the principles I should be focusing on and tailoring these nails to get more of a flat-pick sound from the fingerpicks?

OB: Probably the perfect pick should have something like the angle that the triangle of the pick you prefer has. I used to shape picks in different ways for different sounds, and I still do. There are picks that come to a very sharp point on certain instruments. Some of those sound marvelously well on a cittern. From B.B. King one time I learned to make notches in the side of the pick. This is a flat pick that's been premade to have notches in it. And one would play a phrase, turn the pick, and play the next phrase with the notches [he demonstrates]. That's the notches. Makes a sort of desperately wacky sound. It also does pick noise [he demonstrates raspy chords] for certain styles of rhythm guitar.

Something that approximates what you use. There are so many that one couldn't guess what that might actually be. You evolve a taste for a certain shape or pick, and that'll be the size and shape and pointed-ness you will want to use. [For most of the previous lessons, OB has held, or occasionally picked up to demonstrate, a nylon-string classic guitar. At this point he picks up a steel-string archtop guitar to demonstrate with. He begins to rummage through a box of picks he has on hand.]

[Pulling out a long, thin pick] That's a traditional Italian mandolin pick for tremolo. There are weird shapes in there. [Picks up another] That one has little teeny notches in it for a certain kind of sound [the sound is scratchy, with little volume the way he brushes with it]. I don't use it much any more, but it's still there today along with the cittern picks that I sometimes do use.

The experiment would involve also metal picks. You would try to get something that was approximately the roundness of the tip, the triangular shape and to an extent the thickness so that it had a little bit of flex to it and had just as much flex as your normal flat pick whose sound you actually prefer.

DAS: I had a coaching session with a fairly popular bluegrass guitar/mandolin/banjo teacher in Palo Alto. His kids all play like wizards. He sort of pooh-poohed the fingerpick idea. He said you need a stiff pick because there is a generally preferred bluegrass sound—round, big, mellow—which you would get from a fairly stiff, big pick.

OB: Which is kind of what my nails are.

DAS: So there are two elements. One is the composition of the pick or fingerpick and the structure of it. And the other would be the stroking motion, particularly the thumb, because I'm not going to have the power in my thumb that I do in my whole lower arm rotating from the elbow. Is there a stroke I might think in terms of?

OB: When you fingerpick on steel-string guitar, there are two kinds of strokes you make quite regularly in American folk fingerpicking, one of which is made by the thumb and other by the thumb pushed by the arm. And I have a feeling that second one is what you're going to want. Add a little bit of push from the arm. In that sense it operates almost like what the classic guitarists call a rest stroke.

DAS: But doing that is going to take my other fingers out of position.

OB: In a way. Let me just try this. Put your thumb outside your index finger by about one joint. Just hold those together for a moment and play. Bear with me, this will work after a while into another form. Play a rest stroke with your thumb. With the pick. Soften everything else up and leave these relaxed [OB touches the underside of Smith's extended middle, ring and little fingers]. Let this thing work; put some curve in there [the extended fingers] and loosen up, yeah. Just keep your index slightly against your thumb, be sure it's the outside. Good. Now, when this is done in Delta blues, you tend to have a motion slightly forward like this. You can feel it coming from here [touching DAS's upper arm back at the elbow]. Exactly. [DAS tries it out.] Now play that, and

lighten it up a little bit, and on the return, play with your index finger. Much like playing Renaissance lute, you don't want by any means to have these be equal sounds. You'll probably have to find the appropriate place on the string to do this. Since some of it happens with the index finger inside your hand, that would be closer to the bridge. You'll have to be a little bit further away than you would probably play with a flat pick.

And your flat pick would be about here [near the soundhole] when you were there [pointing closer to the bridge], and your index is unfortunately there [closer to the bridge], so you have to sort of straddle that somehow.

DAS: It's hard to do a rest stroke like this.

OB: It's a quasi rest stroke. But watch: relax the tip of your index finger here as you drive through, and allow your arm to recover and to some extent this joint, these two outer joints, to push through the string.

DAS: Was I curling?

OB: A little bit, yes. And the more you do curl, if you were to do it in the extreme, you'd depart from a very tiny point. You get a rounder sort of sound by allowing that to relax.

DAS: Much more like the thumb.

OB: Yeah, I'm trying to produce something that is not necessarily of equal weight but is a similar sound. [DAS practices the motion.] Allow yourself to put a little bit of arm into that. Toward which you might like to keep just your pinkie resting somewhere. If you keep two fingers resting on the soundboard, or three, watch: [he places his little and ring finger on his knee to demonstrate].With two fingers down it's hard to move [the other fingers and the hand]. If you plant only one, you can move a little bit.

DAS: I never put the second one down.

OB: Good.

DAS: And do you continue practicing with the rest stroke?

OB: At first, yes. There's a moment in flat-pick technique where you definitely do a rest stroke as a preliminary step so as not to pop up in the air, to be sure you drive straight through the string.

DAS: [Tries flatpicking in traditional bluegrass style, alternating bass rest strokes with strum downstrokes and alternating upstrokes on the top string.] I'm doing all rest stroke there.

OB: Yeah. There is a way in which that can be useful. Likewise, I see in that kind of pick technique that there's an integration of arm and forearm, and there are ways that can be done. One of the problems people have occasionally is that they lock their forearm and do it only from below [he points to his wrist], and they don't use a tiny bit of this, a

little bit of this, a little bit of that [pointing to his elbow, lower arm, and wrist], the proper mixture. They freeze one of the joints.

I remember trying to build a certain tone and having someone tell me to play rest strokes with a pick. It worked very well. I played scales with rest strokes with a pick for a while. My stroke became more economical. I had a better sense physically of exactly where I was. Sometimes I would think I probably played little motions for the actual strokes and larger motions with my arm to get from string to string or to strum. And thereby there was a mixture of at least two different kinds of motion involved.

That might be a thumb-index [technique] that we were working on that would be somehow as akin to playing with a flat pick as it could be. I'm still not sure how exactly that works, I've never really tried to play that style of single-line bluegrass playing with picks. But I can see it could be done, and I've seen it done.

DAS: Eddie Adcock does it, and Doyle Dykes, and the luthier Wayne Henderson is quite well known for it down in Virginia.

OB: Send me a bunch of names that I can just Google and look at; I'd love to spend an afternoon watching. I have a body of names that used to be the North Carolina sort of bebop country typical names. [One is] a friend of mine from there years ago, Ray Holstclaw, a very typical name in that place.[17] I'm remembering particularly a great player that I saw, it must have been toward the end of his life when I was very young, a great frailer named Kyle Creed. The name reminded me of someone I'd only heard on records from years ago, one of the great first-generation recorded banjo players from that part of the country named Buell Kazee.

DAS: Kazee, I've heard of him. You'll like Henderson. He gets somewhere between $10,000 and $30,000 for his guitars, and it's hard to get on his mailing list. He became very famous when somebody came and made a video of him making a custom guitar for Eric Clapton.

OB: That'll do it.

DAS: He makes awfully good instruments, and he plays quite well.

OB: A person who used to build student lutes, Larry K. Brown, who lives around Asheville is a fiddler and folk music devotee. He moved to Asheville originally to be nearer to a lot of folk players in North Carolina. He's actually gotten out of the lute business and is building exclusively steel-string guitars, copies of old guitars, Martins and whatnot.

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[17] The orthography of this name and the identity of the person are uncertain.

DAS: I should maybe get in touch with Larry Brown.

OB: I should tell you about him. That's all he does now, and he has all his friends in the area where he's been living near Asheville for so many years, a great hotbed of playing. When I was a kid, we went to more the eastern part of North Carolina, to fiddle conventions in the summer. That's where you would see people like Kyle Creed. I still remember the definitive solidness and swing of their touch. I'm sort of resurrecting that in the back of my mind. It's long enough ago that I remember one of the trips with Roger Sprung.[18] Roger had a station wagon with lots of instruments in the back and a few of us snotty little kids going along with him, and he was going to introduce us to this person and that person. We met Doc Watson and a bunch of people he knew.

We stopped in one town, and I know what year it was because we went to a bed and breakfast kind of place, a small hotel, and man behind the counter said, "Got your Goldwater stickers?" We allowed as how we didn't have our stickers because we were on the road. The next day the entire station wagon was covered with Goldwater stickers: end to end, windows, taillights, license plates. Roger eventually had to sell the car, it never recovered. We rolled out of town with our heads out the window looking, and we discreetly pulled some of them off when we got out of town. I remember that year [1964].

DAS: I see. I'm sure I could improve the tone of these picks with a file.

OB: You could adjust it in any direction you wish. The rounder they were, the broader the surface, the rounder the tone would be, but also the less force it would take to pull them across the strings. They would slide over a little bit more easily. Again it's a question of taking your guitar, and your strings, and your sensibility in making the sound you want to make. You could make that happen.

DAS: And what about the material? Plastic being the logical alternative, or some variant thereof.

OB: Presumably you would want something that sounds like a flat pick, and I'm saying plastic off the top of my head because that could be made, although the plastic of fingerpicks is usually so thick that is has no flex to it. And you might search far and wide to get the one that sounded quite right on a steel string guitar.

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[18] Banjo player and teacher Roger Sprung (1930-) was a prominent fixture in the growing folk and bluegrass scene in New York City beginning in the 1950s. In the 1960s he became nationally prominent through recordings and performances and seems still to be active. See YouTube videos of him at impromptu jam sessions in New York in 2010 or after.

DAS: Or if it's thin enough. As you see I've got a whole bag full of them there. Or if it's thin enough they tend to be on the edge of breakage.

Conclusion

DAS: This has been a very interesting conversation because you have given me some principles, and now I can go apply them.

OB: That's essentially what we're after.

Glossary of Terms and Concepts in these Lessons

Relevant Fields of Biological Study:

Anatomy. The study of the structure of organisms and their parts.
Kinesiology. The study of physiological, biomechanical, and psychological mechanisms of movement in animals, including humans.
Neurology. The study of disorders of the nervous system (including the brain), their diagnosis, and treatment.
Physiology. The study of normal function in living systems.

Abduction. A motion that moves the finger away from its midline position.
Adduction. A motion that moves the finger toward its midline position.
Agonist. A muscle that causes a movement through its contraction; antonym: antagonist.
Antagonist. A muscle that opposes a specific movement, such as controlling it by slowing it down or returning a forearm to its extended position.
Cocontraction. The simultaneous activation of agonist and antagonist muscle groups of the same joint, in the same plane of movement.
Distal. Away from the center of the body, as opposed to proximal, which is closer to the body's center.
Distal interphalangeal (DIP) joint. The tip joint of the finger or thumb.
Enervation. The inhibition of the antagonist muscle while flexing or extending a digit.
Extensor. The antagonist of a flexor muscle. It extends or straightens the digit.
Extensor digitorum. Extensor of the four fingers, located on the dorsal forearm. Antagonist of the flexor digitorum profundus.
Extensor pollicis. ("Thumb extensor" in Latin.) There are two of these—the extensor pollicis brevis and extensor pollicis longus—which work together to extend the thumb. Both are located on the dorsal (= top of the) forearm.
Flexor. The agonist muscle that contracts to bend a finger or other body part. Antagonist of an extensor.

Flexor digitorum profundus (FDP). The finger flexor muscle lying at the lowest level of the forearm, beneath the flexor digitorum sublimis. The FDP originates in the upper anterior part of the forearm, and attaches distally to four tendons, which in turn attach to the distal (tip) joints of fingers 1 through 4.

Flexor digitorum sublimis (or superficialis). Finger flexor muscle lying above the FDP.

Hypothenar eminence. A group of three muscles in the palm that pull the little finger toward the thumb in the opposition movement.

Incoordination. Lack of normal ability to control muscular movement.

Lumbrical muscles. Four muscles in the palm of the hand which attach proximally to tendons of the flexor digitorum profundus and distally to extensor expansions, connective attachments via which extensor tendons insert into the phalanges.

Metacarpal bones. The long bones of the hand between the proximal bones of the fingers and the carpal bones of the wrist.

Metacarpophalangeal joint (MCP). The knuckle joint at the base of the finger or thumb.

Opponens digiti minimi or opponens quintus. A triangular muscle, one of three hypothenar muscles that control the little finger. It serves to bring the thumb and little finger into opposition.

Opponens pollicis. A small, triangular muscle in the hand, which functions to oppose the thumb, bringing it toward the little finger.

Opposer, opposition. The relation between the thumb and the other digits, particularly the little finger.

Phalanges (plural of phalanx). The three bones of the finger: proximal (base), middle, and distal (tip).

Prone. Facing downward. In the case of the hand, the palm is directed down.

Proximal. Closer to the center of the body, as opposed to distal, which is farther from the body's center.

Proximal interphalangeal joint (PIP). The middle joint of the finger or thumb.

Supine. Facing upward. In the case of the hand or forearm, the palm is directed up.

Thenar eminence. Group of muscles in the palm that pull the thumb toward the little finger in opposition.

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