# Massive Doses and Quantum Leaps

Music camp changed my life. It was there that my teacher picked me out of the crowd, making me feel that I had what it takes to achieve some musical distinction; it was there that I first tasted the joys of being totally immersed in music, and also of being totally free of the tumultuous family difficulties I was having at home.

Music camp was a refuge in my mind, so when I graduated from high school I immediately took off for University Town and waited eagerly for the coming of Summer Youth Music Camp, where I would be able to see so many of my old friends who were still in high school and who still were allowed to attend the camp. I went over to visit them so regularly that I was given a permanent guest badge which I simply retrieved at the office every morning with whichever friend I was accompanying.

Of course, I enjoyed seeing my friends, and, I confess, eating the free food they snuck me; but I was also a very serious music student who attended many rehearsals and classes eagerly soaking up information, learning the ways and attitudes, of the music professional. I was not troublesome, or rude, but I did have long hair, a beard, and was pretty scruffy looking. One violin teacher, in particular, really hated me, I understand, because I played the violin so much better than he did and everybody knew it. He had had his petty revenges on me a number of times all through my high school years, and this was one more time: one morning at the beginning of the third week of camp, I went and to get my guest badge, and was accused of pinching the fannies of the junior high school orchestra girls. I was not morally opposed to this type of behavior, I just hadn't done it and I couldn't believe that this violin teacher had told this lie about me.

I stormed out of the place in a righteous rage, and wracked my brain for days trying to think of an extreme enough revenge. In a fit of youthful passion (I was seventeen); I concluded that the worst punishment I could wreak on them was to become such a great violinist that they would have to apologize to me.

That summer I subjected myself to a five-hour-a-day practice regimen which I maintained for four to six weeks. This was not the only

intense period of practice in my formative years, but it was probably the most focused period of practice of my life. I played nothing but 30 second long bows for an hour, then one string scales (slaving over the overtone series) for an hour, three octaves scales for an hour, and then two hours of work on literature (among other things I was working on the Tchaikovsky Concerto). This intensive period of work made a deep impression on my nervous system, imprinting sensitivities in my memory which were there to stay, sensitivities which I could retrieve at any time in the future, even after one of the many long lapses in practice in which I have indulged over the years. That summer I put myself on the map, technically speaking, as a violinist; thus, as my musicianship developed, I had the technical background to support it.

The event I just described may be called a "massive dose practice experience". It was not sustained, but the huge amount of energy expended resulted in what I call a "quantum leap learning experience".

The term quantum leap comes from physics, and has to do with the idea of the escape velocity. If you jump up in the air, force of gravity pulls you back down, UNLESS you jump up fast enough; the space shuttle is able to fly away into space because it goes fast enough to escape the gravitational pull of the earth—this speed is a specific number, and is referred to as "escape velocity".

An electron flying around the nucleus of an atom may also achieve escape velocity if some massive amount of energy flows through the space of the atom, like heat, or a chemical reaction etc. However, the electron that achieves escape velocity from one orbit, will not usually just fly off into space forever, but will jump to a higher orbit more distant from the nucleus of the atom, but still attracted to it. The good news is that the electron never falls back into the lower orbit; it stays out there going faster and slower within that orbit's range of motion; it may receive enough energy to jump to a new, higher orbit, but it will never fall back down into the lower one.

When an electron jumps from a lower orbit to a higher orbit, it is called a "quantum leap". The leap is achieved by introducing a "massive dose" of energy into the system. The music student may use his will power to attract the massive dose of energy it takes to achieve a quantum leap; and

if the student reaches escape velocity, he/she will rise to a new level of ability and will never again fall back, completely, into the old lower level.

Part of this is because there is an actual physical effect which takes place in your brain: when you give yourself a massive dose of something, especially something which requires processing from both left and right brain, your brain actually installs hard wired connections between localities, and expands the number of processing possibilities. It may be said, without unreasonable exaggeration, that serious music study creates new brain cells by forging interfaces between existing cells.

Sometimes the transformations that take place in the brain during a quantum leap may be traumatic. I had a friend in Los Angeles who was studying to be a piano tuner; his teacher owned a big piano warehouse, and my friend would sit back there in this big room with 200 pianos in it, tuning pianos all day. One time, after a few months of training, he started getting a ringing in his ears; the ringing would not stop and by 2:00 in the morning he was frantic. He called up his teacher in the middle of the night, hysterically complaining about this ears ringing. His teacher just laughed and said, "Don't worry about it— you're just getting a tuner's ear."

My friend's brain had received such a massive dose of detailed programming that it went on "overload" for a while, before balancing itself out at its new higher level of sensitivity. All of us musicians achieve some higher-than-normal level of hearing sensitivity, as an occupational mutation. One of my students, after six months of work on hearing overtones, complained that she could no longer handle the sound of a babies crying, because she had become so much more sensitive to the higher frequencies.

The bottom line here, in terms of achieving excellence by subjecting yourself to a musical discipline, is this: learning music is not all uphill progress—sometimes we have to coast on a flat plane for a while; but when the time comes to move forward, in order for you to rise to the new level, you must be willing to give yourself a massive dose of disciplined work—that's the only way to achieve escape velocity. I tell you, I don't know how many levels there are, but I, at age 51, still find myself ascending the stairs to Parnassus by quantum leaps every so often; and each elevation reveals new horizons of understanding, satisfaction, power, and peace.