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The Humid Condition

What is humidity? The dictionary describes it as the water vapor in the air; water vapor being the gaseous form of water.

I happen to be writing this newsletter on a day with dense fog that does not allow me to see farther than 100 feet ahead of myself. It is practically raining, but not quite. What is this fog stuff anyway? Fog is humidity in action. What is humidity? The dictionary describes it as the water vapor in the air; water vapor being the gaseous form of water. It can be measured with a device called a hygrometer. Our average environmental humidity, at least in New Jersey, ranges from 30%-60% during the year. That means we walk around and live in air that is one third to over half water! In the summer and on days with fog, the average humidity can be 80%-99%. We are practically swimming in the air on those days!

Does the air being hotter or colder affect the humidity? You bet it does! Due to a group of scientific laws called thermodynamics, more water fits into hotter air than it does colder air. This is why humidity is measured in percentage in relation to the temperature of the air it exists in. If it is 80°F and the humidity is 50%, there is actually more water in the air than if the temperature was 70°F and the humidity was 50%. We call the humidity measurement **Relative Humidity(RH)** because the amount of actual water vapor particles present is relative to the temperature of the air being measured.

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What does any of this have to do with pianos? The short answer is everything, but it wouldn't be much of a newsletter if I left it at that. Pianos are made of natural materials such as wood, felt, leather, metal, and some paper. The Phoenix brand pianos and Wessel, Nickel & Gross actions are made of carbon fiber, which is not effected nearly as much, but they are unique and not as common. Natural materials absorb and lose water constantly as they interact with their environment. They have structures called pores, like the ones you can find on your face, that water passes in and out of all day, every day. As water is added to these materials through the exchange of humidity with the environment, they swell and contract. If you soak wood or felt in a pool of water, it expands and gets bigger; if you leave it out to dry in the sun, it shrinks and gets smaller. It is the same reason your hair is frizzy on a humid day. Now apply that to the piano in your house. Your piano is constantly changing shape and size in a barely perceivable way, that is, until you play it. Any change in the amount of water your piano is currently holding in its materials will change the sound and the tuning. It will change how the action works, how well the parts hold together, what the case looks like and possibly even what it smells like!

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Well, now what? Is there a way to prevent this from happening? No. This is something we have to live with like growing older or paying taxes. There are ways to combat it, like installing a humidity control system to your instrument or putting a humidifier/dehumidifier in the room with your piano, but changes in the environment will always be present. This is why we tune our pianos regularly so we can keep using them in a satisfactory manner while the environment erodes away at them. What if we put them in an environmentally hyper-controlled room? It would certainly help maintain it for longer, but it would not be especially useful for music making. The mere act of entering or leaving the room to play it would cause a change in the air not to mention the humidity your skin and breath emit naturally as you live. What fun is a piano in a box that no one can touch? No, pianos are meant to be played and loved, not looked at through a window.

Humidity can either be your friend or your greatest enemy; the choice is yours.

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