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I was playing around with my computer last month, and discovered something interesting. There exists a way to create a second computer within your computer called a **virtual machine**. A virtual machine is a program that convinces your computer that additional hardware is present and can be fitted with a different operating system or set of rules it works by. This additional hardware is nothing more than a clever computer program. It does however, require the hardware of the actual, physical computer and could not function without it. Think of it as two possibly unrelated systems within one box.

In 2014, the brilliant technicians at Yamaha created a new type of piano, the TransAcoustic. It looks like a regular upright or grand piano with an electronics box on the outside, but inside, there is a lot going on. It has a normal piano action with hammers and dampers, but it is fitted with a computer and a special bar and sensors for the electronics part of the beast. It also has specially designed transducers on the backside (for an upright) or underside (for a grand) that lightly connect to the soundboard so as not to disrupt the soundboard's function. This piano is able to create different sounds from the electronics that are played directly through the soundboard via the transducers without the use of a speaker system. The soundboard, essentially a wood diaphragm speaker, is the speaker!



Consider the piano itself as a functioning system in a box. It has the hardware of a piano (case, action, strings, etc.) and can function as a piano would. The TransAcoustic aspect of the piano is able to create other instrument sounds, projected out of the soundboard, such as a harpsichord, organ, electric piano, and a string orchestra all while you play the hardware of the original piano. The piano is not a harpsichord, but the TransAcoustic addition allows the piano to sound like a harpsichord. In this sense, the piano is able to run a separate operating system, the harpsichord, on the physical piano hardware. The harpsichord then essentially becomes a virtual machine existing within the original hardware, the piano. Without the hardware of the piano, the harpsichord sounds would not be able to be played or heard.

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The idea of a virtual machine adapted to work on a piano opens up many new possibilities to music creation and piano value. It is not like a digital piano; a digital piano requires speakers because it does not have strings or a soundboard. It is also not like Yamaha's hybrid pianos which have a real wooden action inside of a digital piano case because those also require speakers. It is an entirely different creature that uses the beauty and perfected functionality of a high quality piano with the expansion of the sound palate beyond what the pedals can achieve. It is a wondrous pairing of analog and digital available to pianists and composers to find new sounds and create new music. This could very well be an important part to the future of the piano.