
# Telescopes of the Mind

Hat tip to Howie Klein (sorry for the typo Howie) who pointed out this New York Times article [1] on Dan Levitin's work on the cognitive psychology of music. While the politics of the last decade have been abysmal, in the world of the study of the mind, it has been an exciting era. The improvements in medical imaging have created telescopes of the mind, and with them a generation which will be remembered for opening the study of the brain and its myriad ways of functioning. Just as naked eye astronomy was made virtually obsolete by telescopes, so will most of what we call philosophy and psychology today live on as historical names and picturesque terminology in a world that has left them behind. Dr. Levitin's work is, without exaggeration, pioneering. His book *This Is Your Brain on Music* is a good simple introduction to why music in particular is going to be reshaped by this new science.

Let us start with the basic idea - that there is a correspondence between brain activity, and localization. We know this is both true and also untrue, the brain rewires itself, and different people process in different ways, including sex differences, age differences and so on. But still, there is a strong localization of similar mental mechanisms. By observing brain activity, we begin to map the centers that are related to external behavior. So by looking at someone listening to music, which is an activity with an *external* label, we can see how the brain *internally* divides up the work.

Pre-imaging philosophy and psychology attempted to match external catagories of behavior with externally defined catagories of cognition. This process was hit or miss, the way using external traits of two organisms is a hit or miss way of determining how closely related they are. While our telescopes of the mind are, in their own ways, as primitive as the first astronomical telescopes, the same kind of world shaking insights are possible.

In the world of astronomy, the first casualty was the geocentric model of the universe - that is, the world stays put, and everything else spins around it once a day, while the sun and planets orbit around the earth.

In the world of music, the casualties are going to be as big. One of the biggest is "there is no music, only sound" that dogma of the post-modern. There is music, and it is not merely sound.

Dr. Levitin is also studying, not just music in general, but pop music in particular. In academic circles pop music has always been treated as

the poor cousin of composed or complex music. It would be like judging film by the standards of theatre, of course film isn't theatre, and of course pop music isn't about the same things that accoustically based music is about.

The essential difference according to Levitin is that pop music is more about timbre - that is the specific qualities of an instrument or sound patch or voice, and less about the structure of harmony, rhythm and melody. This should make sense, a recording artist is producing a finished product, like a painting, which is the work of art itself. The specific riffs, harmonies and so on are the brushwork that creates it, not the substance of the work itself:

For his first experiment he came up with an elegant concept: He stopped people on the street and asked them to sing, entirely from memory, one of their favorite hit songs. The results were astonishingly accurate. Most people could hit the tempo of the original song within a four-percent margin of error, and two-thirds sang within a semitone of the original pitch, a level of accuracy that wouldn’t embarrass a pro.

Note his emphasis on matching the original closely as being the important mark. For a classical work, intonation is important, but not matching the intonation of another performance. The reason for this, not in Levitin's book, is that accoustical music is about taking gestures - things people can do - and combining them into effects, and then decomposing those effects into other, related,. gestures. The fugue and the sonata are both different ways of buidling up and transforming gestures. Gestures are not as important when the final surface is the intention, instead, it is achieving, and maintaining, a particular "sound". Dr. Levitin focuses on what makes a "sound" because that "sound" is everything. For a classical composer, having a sensitive ear is the ability to pick apart a work as it is played or realize its harmony from the score, for a pop person, recognizing the decay of sound from multi-generation tapes (as the article mentions) or being able to hear the possibilities of a particular sound are important.

There's another reason to read Dr. Levitin's book - the ideas he is pursuing were called crazy once, and still, by the musical establishment. And yet, brick by brick, the overwhelming wave of evidence piles up, and a new light shines into the world.

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[1] http://www.nytimes.com/2006/12/31/arts/music/31thom.html?ex=1168232400&en=0a272e106438ff8f&ei=5070&emc=eta1