



Creativity Scanned

I've sipped coffee with my pal Stuart Stotts -- Madison author, songwriter, performer, and educator -- during chats which began when he was working on his young readers history of the song, **We Shall Overcome: A Song That Changed the World**. Stuart has moved on from that well received book to a project still in the works about Yip Harburg. I'm a fan of Harburg's writing and use many of his writing tools in my work (with limited success of course). Stuart knew this and kindly involved me to yak with him about songwriting and creativity in general.

The other day he told me about an intriguing lecture on the website "**TED Talks: Ideas Worth Spreading**," about a study on musical improvisation, in which the scientists took a jazz pianist and crammed him, with keyboard, into an fMRI. An "fMRI" (the f is for "functional") is like a regular MRI, but it also tracks the flow of blood. Heightened blood flow is an indicator, in the brain, of which sections are active.

This study reminded me of a 1959 piece by Jack Kerouac called **The Essentials of Spontaneous Prose**, which equates his writing style with jazz improvisation: *"Time being of the essence in the purity of speech, sketching language is undisturbed flow from the mind of personal secret idea-words, blowing (as per jazz musician) on subject of image."*

The TED site says of the lecture's author, *"Charles Limb has two titles on his official website: Associate Professor, Otolaryngology, Head & Neck Surgery, and Faculty, Peabody Conservatory of Music... And he plays sax, piano and bass."*

His talk, given in Nov. 2010, covers briefly a few studies he has done at NIH and Johns Hopkins University. The first compared music played from memory with music improvised. Wheeling a jazz musician, lying on his back, with the specially made nonmagnetic keyboard resting on his legs, into the fMRI machine, was something you don't see ev-

ery day, though I've had gigs that feel like that.

The musician played the music he had memorized, then was asked to improvise. In improv mode, the Medial Prefrontal Cortex went way up in activity and the Lateral Prefrontal Cortex practically shut down.

It's not surprising that the Medial Prefrontal Cortex increased in activity, because that area is involved with self-expression. But it was interesting that the Lateral prefrontal cortex shut way down. That's the area involved with self-monitoring. Kerouac: *"Remove literary, grammatical and syntactical inhibition."*

Dr. Limb: *"We think that at least a reasonable hypothesis is that, to be creative, you have to have this weird dissociation in your frontal lobe...a big area shuts off, so that you're not inhibited, so that you're willing to make mistakes..."*

Artist/cartoonist Lynda Barry says of creativity: *"Dare to suck."*

From a further discussion of this study: *"This unique pattern may offer insights into cognitive dissociations that may be intrinsic to the creative process: the innovative, internally motivated production of novel material (at once rule based and highly structured) that can apparently occur outside of conscious awareness and beyond volitional control."*

Now, I think this is amazing, when you figure out what the sentence says. It implies that once the barrier of the self-monitoring part of the brain is removed, creative things happen OUTSIDE of your consciousness. In other words, when you play some amazing two minute riff on your baritone uke and hear yourself ask "How am I doing that?," it's not an unreasonable question, because you really don't know! The process is unconscious. It's bypassing the deactivated self-monitoring consciousness. I've always been perplexed at, for example, very old musicians -- bluegrass players, for example -- whose speech has slowed to a crawl and who take forever to answer a question, but who can play lickety split improvised breakdowns on banjo or mandolin. This would tend to explain it.

Kerouac: *"If possible write 'without consciousness' in semitrance"*

Now, I'm no great improviser by any means, but I think creative writing is similar. And I know that at some point in a deep session of creative workflow, if I don't pull myself out of this zone, I have a sort of psychotic break and this can be frightening. Before hearing of this study, I always thought it was because I was trying to randomly light up as much of my brain as possible; now I see that it was because I was shutting my conscious self down! I'd love to find if, say, schizophrenia had any similarities to improvisation, in an fMRI. Kerouac: *"Composing wild, undisciplined, pure, coming in from under, crazier the better."*

Dr. Limb also wondered what happens when musicians are trading off, which in jazz is called "trading fours," because a musician solos for four measures then lets the other hep cat do the same. Sort of a musical conversation. Limb had one musician in the scanner and one outside. When trading fours, the tubed cat's language areas lit up, along with the normal improv areas. *"This whole notion that music is a language -- well maybe there's a neurologic basis to it."* This wouldn't have surprised Kerouac.

Sliding an improvising rapper into the fMRI was a logical next step. This research is still in progress, but apparently the new areas to light up when actual word improv is thrown into the mix, are -- even when the rapper's eyes are closed -- the visual areas, as well as the language and self-expression areas. This reminds me of a suggestion by Kerouac that I had taped to my computer for years: *"Don't think of words when you stop but to see picture better."*

Though these studies were limited to Jazz and Rap, there's no reason to think they don't apply to folk jam sessions, drum circles, instrumental breaks, and the work of improvisational songwriters like L.J. Booth who can make up songs on the spot. Regarding Kerouac's prescient piece, I'm sending it to Dr. Limb, though I have a hunch he has it over his desk already.

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