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An Inside Look Behind Pandora.com

An interview with the man behind the wizard

Tim Westergren, the creator of Pandora began his career as a musician. He toured with a rock band and faced the stark reality of earning a living as an artist. One of his greatest challenges while touring with a group called Yellowwood Junction, was locating appropriate venues for showcasing their music. How could they perform to an audience that would likely enjoy their music? This is the same challenge that a film director experiences when hunting for a composer who can accentuate the screenplay with the perfect musical score. Westergren understood that a director seeks a specific type of music, not just a genre. He was also aware that most people passionately love music, but don't necessarily know how to actively seek it out. It was while Westergren pondered these dilemmas, that he birthed the idea for the *Music Genome Project*. Each song contains an incredibly complex collection of attributes, much like human beings are a complex recipe of chemicals that build our physical and mental being, but the elements of each are ridiculously simple.

The primary colors of music

Direct marketing is about matching a personal taste to a product, and Westergren felt a need to uniquely define music before it could be delivered to the listener. The Music Genome Project set out to define an essence of music. Think of a musical attribute to be the equivalent of a gene. A Western-composed song is merely some variable of eight notes per octave, (plus some sharps and flats), a simple combination of wavelengths. Likewise human DNA consists of only four nucleotides and less than 40,000 genes, yet look at the overwhelming variety of music and human beings in the world. It's all about assembly, recombination, and probability. The basic components of a song are comprised of melody, harmony, rhythm, form, instrumentation, orchestration, the arrangement, lyrics, and vocals. Westergren refers to these as "musical primary colors." Voice for example

is broken down into about 30 attributes that describe range, timbre vocalization, and breathiness and each song is assigned up to 400 attributes overall.

The musical componentry has nothing to do with popularity, genre, or physical attributes of an artist, which is what other radio stations are likely to consider for their playlist. In other words, Pandora is not satisfied with calling a song “country.” Rather, it is about figuring out what makes a song sound country-esque. Whereas genetic code can be crunched with computers in order to identify DNA, the same cannot be said for music. One cannot analyze a song for its individual notes and conclude that it has Portuguese lyrics, piano playing, and bowed string ensemble. These words which appeared only momentarily on my screen are my only fleeting insight into the adjectives used to create my *Cesaria Evora* radio station.

The algorithm

Pandora helps the listener create a personalized radio station by employing a mathematical algorithm. Each time the user adds an artist to their station or gives a song the thumbs up (or down) Pandora’s algorithm goes to work. The algorithm itself is a trade secret, a quiet departure from the infighting that has taken place over patent and copyright-protected software in the world of e-commerce.

Unfortunately the 400 attributes of each song are also kept under wraps. Unfortunate perhaps because information professionals love to understand how things are classified. Books are cataloged with *Library of Congress* subject headings. Trademark drawings are described with a six-digit codification system. Linnean taxonomy classifies living organisms. These are all open source worlds, and yet here we have musicians doing the classification in secret. While high-level cataloging and authority control have made way for author-provided keywords and social tagging, and reproductive hybrids have biologists reassessing what exactly defines a species, the debate over controlled tagging versus folksonomy continues. It is clear that assigning such detailed labeling to a song is laborious, but the result is superb. With an identity and an algorithm, songs begin to relate in a subtle and enticing way, luring the multi-tasker’s attention toward the music.

A labor of love

How much labor goes into Pandora? The answer is a lot. Approximately 70 people work full time to make the site work. Of this, about 45 musicians work half time classifying songs. Each music analyst is faced with a seven-page checklist of 400 attributes for each song. In addition there are 20 software programmers creating and maintaining the interface and the genome project, along with another 10 in business development, marketing and other support areas, two people in charge of music submissions, and one librarian. Tens of thousands of songs are submitted to Pandora each month. Of these only about one out of every eight makes it into the bank, but each song takes about 20 minutes to classify.

The long tail

In promoting an abundance of independent artists Westergren hopes that Pandora will give rise to a musician's middle class. Currently artists experience either feast or famine. Pandora could provide mass exposure to the *long tail*, or those low frequency purchases that can cumulatively outweigh those of even the biggest blockbusters. By encouraging obscure artists to submit their music to the MGP, Pandora bolsters their popularity. Music is a universal passion, and Westergren wants to help the world cultivate that passion. Yes, there are other music websites who employ similar to tactics such as Last.fm, and though they deserve mention, none impressed me like Pandora.

Who pays for art?

The project was originally funded by venture capitalists and is now run on advertisement and memberships. Listening is free, but for \$36 a year the subscriber receives music commercial-free. Admittedly at this point in time, the advertisement is fairly unnoticeable. Pandora also gets a little kick-back from the songs they sell through iTunes (4%) and the albums they sell on Amazon (7%). Pandora has its share of expenses as well. In addition to the salaries, hardware, and bandwidth that run the site, they pay hourly streaming and licensing fees to ASCAP, BMI, Sound Exchange, and SESAC, who in turn pay royalties to the artists. The fees are based on the number of listeners, so the more popular the site, the higher the fees.

Universal Music, the largest music company in the world, recently agreed to back a new venture called *SpiralFrog*, a legal music file-sharing network. Though iTunes has been very successful in its 99 cents-a-song model, an

estimated 40% of songs are still illegally downloaded for free. SpiralFrog will give up entirely on selling songs and opt for paid advertisement. Listeners will not be able to copy songs to a CD, but can download an unlimited amount of songs to their computer and some other hand-held device. Apparently this new generation of music lovers cannot be trusted to pay for music, but will happily part with their money for a pair of jeans.