Data Mining TV Comedy: Laugh Tracks and Sitcom Production Modes
Jeremy G. Butler
University of Alabama
jbutler@ua.edu

Few aspects of television style attract more universal disdain than the laugh track. In *Annie Hall*, Woody Allen becomes physically ill when he observes his friend "sweetening" his TV show with canned laughs provided by a sound engineer named Charley.

{SLIDE: *ANNIE HALL* CLIP}

To Allen, canned laughter is inauthentic, un-earned, and "immoral."

{SLIDE: LAFF BOX vs *MY FAVORITE HUSBAND* STUDIO AUDIENCE}

And by naming the faceless sound engineer in this clip, Charley, he makes a metadiegetic reference to Charley Douglass, who provided the canned laughter for most sitcoms of the 1950s through '70s. Clearly, Allen believes that canned laughs, from a "Laff Box," qualitatively differ from laughs earned honestly by amusing a studio audience. In the 1970s, programs such as *Cheers* reacted against the canned laughter of many 1960s sitcom hits and boasted during their opening credits that they were "filmed in front of a live audience." These laughs, they imply, are authentic, not fabricated. But, as Jacob Smith explores in *Vocal Tracks*, these claims to authenticity are often spurious as sitcoms' studio audiences are heavily manipulated during the recording sessions—through applause signs, prompts from warm-up comedians, volume adjustments by the on-set sound mixer, and so on.[1] In a *TV Guide* article from 1966—one of the few general-interest magazines to pull the curtain back on the laff box—the author, Dick Hobson, notes, "Audiences composed of living, breathing, sentient beings, it seems, don't sound too good. 'The fact is,' says Arthur Julian, a [sitcom] writer, 'real audiences sound phonier than the laugh track. Sometimes they freeze up and act unnatural.'"[2] Consequently, even the audio of

real audience responses is itself always manipulated. All sitcoms' audience-response tracks are "sweetened" with additional laughs during post-production—as in the *Annie Hall* scene. Moreover, audience-response tracks may sometimes tone down the studio-audience's reactions—subtracting or trimming excessive laughs and applause.

Distinguishing authentic and canned sitcom laughs is what first drew me to studying laugh tracks, but the more I pursued markers of authenticity, the less attainable they proved to be. The easy response would be to not even try—would be to lump all sitcom laughs together as inevitably and invariably fake. But claims to comic authenticity persist and continue to have meaning, as evidenced by showrunner Chuck Lorre rising to defend *The Big Bang Theory* when it was accused of using a laugh machine.

{SLIDE: *BIG BANG THEORY*/LORRE SCREEN SHOT}

That led me to my research question: Can one perceive a difference between canned laughter and in-studio audience laughter? And could I devise a method to systematically compare and contrast laughtracks of studio-audience shows with those recorded without them? Subsequently, I modified a digital-humanities project I'd created to measure the length of shots and statistically analyze them—which I called Shot Logger—into a project to measure the lengths of laughs and transform them into data that could be crunched with the aid of basic statistical methods.

{SLIDE: SCREEN SHOT OF SHOT LOGGER, LINKED TO WEB}

I unimaginatively named my new project, Laugh Logger.

{SLIDE: SCREEN SHOT OF LAUGH LOGGER, LINKED TO WEB}

My hypothesis in this particular Laugh Logger project engages canned laughter and TV comedy's main modes of production:

{SLIDE: HYPOTHESIS}

H_1:   The pace of laughter in sitcoms recorded with a studio audience (typically, multiple-

camera productions) will be different from those recorded without an audience (typically,

single-camera productions).

Methodology

Laugh Logger partially automates the statistical analysis of laugh length and frequency in TV

programs. If there is any interest during the question-and-answer period, I would be happy to

explain how I hacked this together, but suffice to say Laugh Logger calculates the length between

the *starts* of two laughs—or what I call the "laugh interval"—and then automatically generates

basic statistics regarding the intervals' pace and rhythm—as in this Laugh Logger page for the

"Latka's Cookies" episode from *Taxi*, 1981.

{SLIDE: Laugh Logger_ Data Detail_Taxi-detail.png}

Laugh Logger calculated that this episode is 1,342 seconds long and that it contains 125 laughs.

That information alone is enough to allow us to calculate an average laugh interval, or ALI, of

10.7 seconds or the equivalent of 5.58 laughs per minute. I have also been experimenting with

charting these data—hacking a chart from shot-measurement site, Cinemetrics, for shot lengths

and converting it to laugh intervals.

{SLIDE: Laugh Logger_ Data Detail_Taxi-detail-detail.png}

Laugh Logger also calculates other statistics that provide a numerical description of laughs'

pacing and rhythm—including median laugh interval and standard deviation.

{SLIDE: Laugh Logger_ Data Detail_Taxi-detail.png}

What Does It Mean?

Ultimately, these descriptive statistics of a laughtrack audio text mean nothing if they cannot be correlated with some aspect of television production and/or audience reception. Previously, I've used Shot Logger statistics to investigate the editing patterns in *Happy Days*, which is an anomalous sitcom in that its first two seasons were shot single-camera and its third and subsequent seasons were shot multiple-camera {11 total; 1974-1984, ABC}. In that study, I found that data-mining editing statistics revealed insights into TV's modes of production that would have otherwise been impossible to detect. Could similar insights be gained from a investigation into *Happy Days*' laugh tracks?

{REPEAT HYPOTHESIS SLIDE}

I reasoned that Laugh Logger and *Happy Days* could test my hypothesis: "The pace of laughter in sitcoms recorded with a studio audience will be different from those recorded without an audience." Here is a program that had episodes recorded both with and without an audience and yet it maintained the same performers, producers, and many of the same scriptwriters across all its episodes. Thus, the chief variable when comparing these episodes was the presence or absence of a studio audience. Furthermore, this was not the only ABC sitcom that made the switch to a studio audience after debuting without one. *Happy Days* producer Garry Marshall had done the same thing four years earlier with *The Odd Couple*, which shot its first season (1970-71) without a studio audience and then added one for the second to fifth seasons. Just as with *Happy Days*, *The Odd Couple* maintained most of its production personnel and all of its cast as it shifted production modes.

The Odd Couple is a particularly curious example, because of a unique experiment its producers and ABC conducted in 1971. During its first season, when there was no studio

audience and its laugh tracks was wholly fabricated, its cast and producer rebelled against the fake laughs. ABC agreed to air an episode without laughs and then gauge viewer response. Here's a small sample.

{SLIDE: *ODD COUPLE* VIDEO CLIPS}

Audience response was reportedly four-to-one in favor of ditching the laugh track, but ABC decided not to do so. The following week, the canned laughs returned and six months later, when the second season debuted, an ostensibly "authentic" laugh track based in a studio audience replaced the canned laughter. The cast, it has been reported, was much happier working in front of a live audience and, after all, the show was based on a stage play.

Our method of investigating the possible distinctions between canned laughs and studio laughs was to log all the laugh intervals in every episode from *The Odd Couple*'s first two seasons—one without an audience and one with—and *Happy Days*' first four seasons—two without an audience and two with. This resulted in the measurement of over 11,000 laugh intervals.

{SLIDE: TABLE OF LAUGHS LOGGED}

We then put on our virtual hard hats and went data mining. A calculation of the median laugh interval (MLI) in each program and each production mode showed only minor differences between them.

{SLIDE: MEDIAN, AVERAGE, AND STANDARD DEVIATION.}

Table x: MLI

	No Audience	Audience
The Odd Couple	13	12
Happy Days	11	10

But the mean or average interval length revealed a large gap between the two production modes.

Table x: ALI

	No Audience	Audience
The Odd Couple	19.8	15.5
Happy Days	16.8	13.6

Was this, statistically speaking, a *significant* difference? We ran t-tests comparing the two production modes and found that indeed it was ($p < .0000$). {probability value?} Further, the difference in results between the *median* interval length and the *average* interval length is explained by the standard deviation for the four "populations."

Table x: Standard Deviation

	No Audience	Audience
The Odd Couple	36.0	19.6
Happy Days	18.0	11.7

{SLIDE: STANDARD DEVIATION CHART}

In both programs, the standard deviation for the audience episodes is much lower than that of the no-audience episodes. This indicates that the variety of interval lengths is considerably less in the audience episodes.

What conclusions do I draw from these results?

{SLIDE: HYPOTHESIS AGAIN}

First, my hypothesis (The pace of laughter in sitcoms recorded with a studio audience will be different from those recorded without an audience) is clearly affirmed. On average, the episodes with audiences have significantly shorter intervals between laughs than the no-audience episodes. Or, to put it another way, we can affirm that the audience episodes have substantially more laughs per minute, and thus that the pace of laughs is much faster in the audience episodes. This is, perhaps, unsurprising as the program's producer, Garry Marshall, has commented specifically

that the no-audience, single-camera style of *Happy Days* was considered by the networks to be too subdued to attract and hold the attention of a mass audience. The change to multiple-camera shooting in front of a studio audience was thus not just a shift to a different production mode, it was also a deliberate shift to a different comic sensibility. The jokes and gags had to come hard and fast... and my analysis proves that they achieved just that.

{SLIDE: REPEAT MEDIAN, AVERAGE, STANDARD DEVIATION}

My second conclusion is one that I did not expect going into this study and thus it illustrates how data mining can discover aspects of television that are not evident to the "naked eye," as it were. For, I found that it's not just the pace or speed of the laughs that are different in the two production modes. It's also their rhythm. The audience episodes have much less variation in the space between laughs than the no-audience ones. The episodes with in-studio laughter have jokes/gags in a steady, constant rhythm: laugh-beat-laugh-beat-laugh-beat. The canned-laughter shows, in contrast, are more like: laugh-beat-laugh-beat-beat-beat-laugh-beat-beat-laugh. This distinction is what is revealed by the standard deviation numbers in my results. The lower the standard deviation, the closer the lengths of the laugh intervals are to their average. And conversely, in the no-audience shows, the high standard deviation numbers signify a great degree of variance from the average. Viewers may have a sense of the sameness and predictability of laughs in studio-audience shows, but it is only through data mining that we can precisely identify the degree of that sameness.

(**Discussion**)

My claims for this digital-humanities research are modest. Laugh Logger can provide statistics that accurately describe the pacing of sitcom laughs, but the harder question will always be,

"What does one do with such descriptions?" In my own exposure to digital-humanities projects, this is a common and daunting challenge. DH projects often provide intriguing, even provocative, ways to *describe* humanities phenomena, but do those descriptions then lead to greater understanding of those phenomena?

For my part, I seek understanding of the laugh track by returning to claims of authenticity. My statistical results confirm journalist Daniel Walters's intuition that the studio-audience, multicam mode of production "forces the performers to woo the audience, it forces the writers to pack the scripts – for good and bad – densely with punchlines. It does no good to write a script to make the audience amused, or make them smile. It has to make them laugh. As a result, in these shows we see broader, rimshot comedy valued over the 'comedy of tone/comedy of quirk' style that, say, Wes Anderson uses."[3] Moreover, based on my results, I can say that studio-audience tracks in these two sitcoms are more routinized that canned-laughter tracks. Studio-audience tracks provide laughter in a consistent, formulaic rhythm—much like the laugh-beat-laugh-beat formula of a talk-show monologue. Canned-laughter tracks offer less predictable comic rhythms, which anticipate the offbeat rhythms of recent comedies without laugh tracks, such as *The Office*, *Curb Your Enthusiasm*, *Louis*, and *Broad City*.

Of course, it is entirely possible that my results only hold true for two particular, isolated instances drawn from the same TV network (ABC) and developed by the same producer (Garry Marshall). It's too early in my research for definitive conclusions, but the 30-plus programs in the Laugh Logger database allow for an intriguing final observation. If we examine the variation in laughs-per-minute in all of Laugh Logger's entries, we can clearly see that the no-audience programs have nearly twice the degree of variance (standard deviation 1.60) than that of the

audience programs (0.82).

{SLIDE: LPM: NO AUDIENCE VS AUDIENCE, WITH AVERAGES AND

DEVIATIONS}

Thus, the canned-laughter shows as a whole suggest a greater flexibility in comic timing—a

flexibility that we see playing out in today's wave of single-camera comedies.

Notes

1. Jacob Smith, *Vocal Tracks: Performance and Sound Media* (Berkeley: University of California Press, 2008), 42-43.

2. Dick Hobson, "Help I'm a Prisoner in a Laff Box," *TV Guide*, July 9 1966, 20-23, part 2, p. 21.

3. Walters, Daniel. "Why canned laughter beats real laughter," *The Pacific Northwest Inlander*, March 23, 2011, http://www.inlander.com/Bloglander/archives/2011/03/23/why-canned-laughter-beats-real-laughter