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Multi-Track Recording in the 1990s

Multi-track recording involves the capture of individual sounds (guitar, drums, flute, finger snaps, vocals etc.) through separate audio channels onto individual tracks on a single tape. An artist can record several tracks that can be shaped, polished and deconstructed without limit, and tracks can be played back simultaneously or separately.¹

Multi-track recording in the 1990s continued the tradition of recording, editing, mixing and mastering on analog tape, though fast-improving digital technology began to take hold. The introduction of digital audio workstations (DAW) such as Pro Tools provided digital sound recording and manipulation. The digital equipment, however, continued to rely on analog tape storage for the digital output, or hard disk based computer systems.² The band Garbage is a good representative of a new wave of bands that embraced and incorporated digital recording technology into their creative and recording process.

Composition

This is the origin stage where ideas are shaped into full-bodied songs. Technology is not necessarily required for this process, though it was common place for bands to continue the tradition of recording 4-track demos onto 2" analog tape. These demos were the models, skeletons, or spring boards for what would find its way on to the final album. Most bands to this day record demos prior to entering a studio to cut an album, or at least work them out live extensively.

¹ Ben Blakesley, "The Formation of a Song," [abclearnguitar.com](http://www.abclearnguitar.com), 2004. <www.abclearnguitar.com/recording.html> (14 October 2011)

² http://en.wikipedia.org/wiki/Multitrack_recording

Preserving demos is important because they are a record of creation from an artistic entity. Demos can be used as a basis to gauge artistic progression both in the process of producing an album and also throughout a career, and they are also entertainment to fans which can translate to commercial commodities for the band and recording company.

A band like Garbage that utilizes studio technology heavily even in their songwriting process will not necessarily produce collections of demos that can be easily separated and stored. Similar to processes by artists such as Nine Inch Nails and Portishead, multiple samples are being experimented with on the path to something eventually resembling a song, but these varying stages are not necessarily saved. It's difficult to imagine that hours of experimentation would be organized in a navigable manner if any of it was even kept. This begs the question, is it necessary to preserve hours of a band trying to work out a song, coming up with naming conventions for guitar tracks that sound like percussion etc.

It would be safe to assume that most of the tracks produced during these early writing stages would be random clips of sound (save for what makes it to the editing and mixing stage). The migration of all of the material alone would be a great undertaking. Garbage, being a tech-friendly band, would have implemented several program updates over the last decade and half since their self-titled debut. The studio in which they recorded all four of their albums no longer exists. And as they create new sounds in the studio for each album, it is unlikely that they would need a digital library to repurpose loops from previous albums.

Recording

The recording stage finds the artist laying down the more refined portions of the songs they have been composing and demoing. This is when the drums, marimbas, rocks in a box or what have you are recorded to their own track and await any necessary editing. The mics are

connected to a mixing console, which combines the audio material and allows for the engineer to control volume levels of separate signals. If vocal volumes need to be raised and the drum volume needs to be lowered, both tracks can be adjusted without affecting each other or any other tracks. The mixing console is connected to the multi-track recorder where each mic signal is set to its own track.³

Garbage wrote and recorded their self-titled debut (1995) and second album *Version 2.0* (1999) in Smart Studios in Madison, Wisconsin. The studio was founded by Butch Vig and Steve Marker in the 1970s, and by the time Garbage was born contained state of the art equipment.⁴ Garbage initially recorded on an analog 32 track 2" tape MX-80, which implies a more typical analog approach that was still in use in the 1990s. However, they would then run every track save for vocals through their digital samplers for manipulation. They used two Akai S1000 and two Kurzweil K2500 samplers heavily in the creation and recording process of their self-titled debut. A sampler is an instrument that allows for the manipulation of sound loaded into it, and because the process is digital it allows for easy access.

The Akai S1000 was first released in 1988, and is a 16-bit stereo sampler. The S1000 model is considered among the first professional quality samplers, and it has the ability to splice, cross fade, trim and loop music in CD quality.⁵ The Kurzweil K2500 has a full keyboard of 76 semi-weighted keys, 8 real-time sliders, 2 ribbon controllers, pitch and mod wheels and MIDI controllability. It also has a 32-track song arranger, which allows for the creation of complex song sequences.⁶ Garbage utilized these devices in both their composition and recording stage,

³ Ben Blakesley, "The Formation of a Song," [abclearnguitar.com](http://www.abclearnguitar.com), 2004. <www.abclearnguitar.com/recording.html> (14 October 2011)

⁴ Smart Studios. <<http://smartgeeks.com/>> (25 October 2011)

⁵ http://en.wikipedia.org/wiki/Akai_S1000

⁶ <http://www.vintagesynth.com/kurzweil/k2500.php>

primarily during the recording of their debut album as this is prior to their purchase of Pro Tools. Technology made it not only simpler but less expensive to alter a track's speed or timing, and to ensure use of the most desired take. The material cut to tape from the samplers would be incorporated into fully mixed songs. While not a high priority, maintaining or at least displaying one of each sampler provides historical context for past recordings. It is not necessarily in the best interest of the band to invest in these machines if they are no longer integral to their creative process.

Despite all of the digital processing in the samplers, Garbage ultimately preferred tracking to analog tape using two 24-track Studer A-827 2" analog tape machines. Dubbed one of the best machines ever made by Chris Shepard of Chicago Recording Company, the Studer A827 has the ability to play and record backward and forward, allows for varied speed control, easily transfers material to Pro Tools if desired, creates a warmer, louder sound, and also has two alignments which allows for the use of different tape brands.⁷

Material put to tape is high priority for preservation. In a recent interview with Garbage, they mentioned that their masters had reverted back to them. It would be interesting to clarify this statement and learn if they physically possess them and how they are being stored. A band on a major label in the 1990s did not physically get to hang on to their masters, so in this instance a band could make a copy of the mixed recordings they were submitting for mastering. This would be an important document of the near final step in the band's creative process, as well as a good source for the band if they ever wanted to re-mix the albums for possible special editions or re-releases of albums in the future. Analog tape material would need to be stored in a

⁷ <http://www.gearwire.com/studer-a827-chicagorecordingco.html>

secure environment with proper shelving, climate control, low light with a fire suppression system.

With the purchase of the newly released Pro Tools III in 1997, Garbage's recording process drifted even further into the digital end of the technological spectrum.⁸ Pro Tools was originally released in 1991, containing only a four track recording option. It was not until the release of Pro Tools III, a 24-bit 48 track version that musicians began to fully utilize Pro Tools.⁹ It can be surmised that Garbage was one of the first bands to take the Pro Tools plunge. The advent of the new and improved Pro Tools birthed the home recording phenomenon, relegating the professional recording studio primarily to mixing duties.¹⁰

Butch Vig explained that the advantage of using Pro Tools III was that it allowed for recording multiple takes on a hard drive which could then be compared both visually and audible side-by-side. This opened the door to a level of experimentation that was not initially affordable when using physical tape for the recording process.¹¹ The basic recording workflow using Pro Tools III involved putting Pro Tools "on line" and using a digital device synchronizer created by Digidesign called Universal Slave Driver to synchronize the multi-track digital recordings to the tape machine and process the take using either a McDowell compressor bank or filter bank, ultimately printing a stereo mix to 2" tape for mastering.¹² The McDowell Signal Processing (McDSP) compressor bank provides effects such as noise reduction and harmonic distortion,

⁸ Sam Inglis, "Recording Garbage," Sound on Sound, 2002.

<<http://www.soundonsound.com/sos/jun02/articles/garbage.asp>> (8 October 2011)

⁹ Greg Milner, *Perfecting Sound Forever: the Story of Recorded Music*, London: Granta, 2009, 337.

¹⁰ Milner, 338.

¹¹ David Weiss, "Studio Drumming in the Age of Pro Tools," Drum! Magazine, 2001.

<www.drummagazine.com/pluggedin/post/studio-drumming-in-the-age-of-pro-tools/> (10 October 2011)

¹² Sam Inglis, "Recording Garbage," Sound on Sound, 2002.

<<http://www.soundonsound.com/sos/jun02/articles/garbage.asp>> (8 October 2011)

while the McDSP filter bank is a high-end equalizer plug-in that emulates both vintage and modern filters.¹³

Mixing

The mixing stage brings all of the recorded multi-tracks together and alters them to create a singular aural vision. The tracks are manipulated to create a stereo recording (a standard) to in effect have all of the tracks in one space, creating a format that can be used by the consumer.¹⁴

The mixing process was traditionally carried out by a mixing engineer, using a mixing console to manipulate the tracks. A mixing console receives all of the track signals and allows for any changes in the levels and dynamics of those audio signals.¹⁵

Garbage often mixed while they recorded which seems a typical process for a more technologically inclined group. They used a Harrison mixing console with flying faders. Harrison seems to be a highly regarded brand that would have been typical in professional recording studios. Flying faders allow for the gradual increase or decrease of an audio signal.

Mastering

Mastering is the preparation of final stereo recordings of each song for commercial use. The ultimate goal is to ensure the album can be played on any commercial system and sound good. An important part of the mastering process is quality control by the audio engineers, as they are the last people to hear the tracks before products are printed.¹⁶ Artists generally sent their tracks out to qualified companies for mastering. Mastering engineers are transferring

¹³ <http://www.mcdsp.com/>

¹⁴ Blakesley.

¹⁵ http://en.wikipedia.org/wiki/Mixing_console

¹⁶ TW, "Interview: Bob Weston of Chicago Mastering Service & Shellac," Bounce to Disk, 25 Oct. 2007, Web, 8 Dec, 2011, < bouncetodisk.com/blog/interview-bob-weston-chicago-mastering-service-shellac/>

recorded audio from a source provided by the band to a data storage device that is in effect the *master* that is the source from which all copies will be produced.¹⁷

Garbage sent out both their self-titled debut and *Version 2.0* for final editing, mastering and post production to Masterdisk in New York, NY.¹⁸ According to Masterdisk's website, they are one of the oldest and most respected mastering studios in the world. Masterdisk received the 2" stereo recordings which were mastered to CD, audio cassette and vinyl. At this stage, the music has taken on the form of product and it is ready to be manufactured and distributed to retail outlets all over the world.

Release

Where and how an album is distributed depends on label contracts, the process of which is often different depending on the continent or country an album is being distributed in.

Garbage's self-titled album was released through Mushroom records and distributed by 3MV/BMG. Version 2.0 was released through A & E Records. The physical representations of the music, including promotional materials such as posters, are all significant ephemera for preservation.

While not the blue print for all bands in the 1990s, Garbage was a part of an important pack of acts who embraced digital technology to create, record, mix and master their albums. This is a good deal of digital content produced in a time when digital preservation wasn't even a term. Content may have made its way onto analog tape for mastering, but that material does not encompass the entire output. A band like Garbage who recorded in their own studio for multiple

¹⁷ http://en.wikipedia.org/wiki/Audio_mastering]

¹⁸ "Butch Vig: Nevermind the Garbage," Sound on Sound, 1997.

<http://www.soundonsound.com/sos/1997_articles/mar97/butchvig.html> (18 October 2011).

albums may have a more survey-friendly database of past digital recordings or remnants of elements from recorded tracks. A band or artist who recorded in multiple studios in different geographic locations would most likely not retain so much pre-mastered material. To really grasp the state of this huge level of output, an in depth survey and potential collection assessment(s) should be conducted.

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