Sound has always been an intrinsic part of the moving image, from early shorts without a proper soundtrack, accompanied by live musicians, to the modern Hollywood blockbusters that use 7.1 digital sound to enhance the reality of the narrative. As sound techniques and technologies have advanced, so too have the means of artistic expression in cinema. I intend to present an overview of sound use in cinema, and examine how some of the larger changes have influenced the structure of filmmaking. I will also touch upon the role of sound+image in modern experimental performance and computational forms of expression, in which it is possible to have the image and sound intrinsically linked.

How sound is used in cinema is also an important component of any discussion involving audio technologies, as the technology has traditionally enabled greater use of the the cinematic space. Traditionally sound is used either as a form of diegeses, moving the narrative forward through speech and as a means of fleshing out the fictionalized worlds (ambience, sound effects, etc). This iconic aspect of sound in cinema is the aspect that has benefitted most from the introduction of these technologies. Sound is typically referred to as off-screen, or on screen, belying the primacy of the image in the equation.

In the early days of cinema, when people were still afraid a train was going to leap off the screen and crash into the audience, the sheer spectacle of the moving image was usually enough to keep people coming back for more. As time moved on, and the sophistication of the audience grew, so did the sophistication of the filmmakers. While there was still a rigidity to the movement, and staging was restricted to the older theatrical forms, it began to slowly achieve a language that was different from other forms at the time.

However, there was always an interest in linking sound with the image. As early as 1904, Eugene Lauste was recording sound onto photographic film, transforming the vibrations into light waves. Edison too, was interested, and produced a series of technologies that mechanically linked sound and image. The first film that had an amplified soundtrack, “Don Juan,” was released in 1926, using a system dubbed “Vodaphone.” The film was seen as more of a novelty than a technological breakthrough, or artistic triumph. interestingly enough, the majority of these first soundtracks gave more attention to what happened off the screen than what happened on the screen (the idea that onscreen sound was considered redundant to providing information about the story), However, in 1927, “The Jazz Singer” starring Al Jolsen was a massive financial success. Partially in response to this, studios decided to start using sound in all their films.

These first few years, the sound was muddy, mono, and everything was recorded hot to make sure it actually registered on the track. However, in 1929, Rouben Mamoulian’s first film, “Applause” (1929) used the then novel idea of creating acoustic depth by varying the amount of ambient sound in proportion to the

distance of shots. This seemingly minor achievement began the utilization of sound to inform about the world in a fashion that went beyond “sound.”

Technology in filmmaking kept moving quickly: (examples of camera changes here). Aesthetic changes. Also, microphone technologies were rapidly evolving. Directional microphones presented the opportunity to pick out specific sounds from actors, and higher fidelity microphones enabled a broader range of vocal inflections to be perceived. the depth of the sound increased, became fuller, more of a real piece of the imagined world. An actor was able to now use their voice as a tool to complement their body’s language.

As the filmic world was expanded through the introduction of sound, there were still those who proclaimed that cinema, in it’s essence, was being ruined with the introduction of the “talkies.”

Walt Disney’s Fantasia was a breakthrough in the use of sound in cinema, incorporating 3d sound, dubbed “Fantasound.” In reality, it was a quadrophonic system that was born out of Disney’s frustration of existing sound technologies. The Philadelphia Orchestra flayed the score, and Disney was present for the recording sessions. When presented with the mix his audio engineers had created for the soundtrack, he was struck by the poor quality of sound. The engineers came up with a solution that had six channels, one for each section of the orchestra, a seventh that was a mix of those six, and an 8th channel that consisted of the entire orchestra. The film also marked the first use of the click track while recording the soundtrack, overdubbing of orchestral parts, and simultaneous multi-track recording. Special rigging and speaker setups were necessary for the accurate representation of the audio in the theater, and it was prohibitively expensive for theater owners to convert their existing setups to the specific requirements necessary for Disney’s vision. Alas, Fantasia was only shown as intended in a few theaters and only for a few runs.

In 1952, “This is Cinerama” was released, a widescreen spectacle that required a special presentation system. The experience is supposed to be akin to today’s IMAX presentations. While there were 7 audio tracks used, only six were actually sound, the 7th moderated the volume of the amplifiers). This was the first successful use of stereo sound in cinema, but again, as with Fantasia, the requirements for a theater to show the film were steep, limiting the exposure.

In 1976, accompanying the release of “Logan’s Run,” Dolby Stereo made it’s debut. With the release of Star wars in 1977, and it’s reliance on sound technology, Dolby soon became the standard for sound mixing across thousands of theaters.

However, despite the sudden emergence of this rich tapestry of sound, designed to support and enhance the filmic world, it was still limiting. Room tone and background noises were designed to flow around the audience, but dialogue and

important sounds were tied to the screen. The importance of the sound was growing, but the narrative aspects were still firmly attached to the image.

In 1982, THX was released as a quality control system. It was developed for the release if Return of the Jedi, to verify certain theaters would have the most accurate sound reproduction of the film's soundtrack. It covers a wide range of audio playback devices, functioning as a high-fidelity sound reproduction standard for movie theaters, screening rooms, home theaters, computer speakers, gaming consoles, and car audio systems.

1988 saw the introduction of digital standards for cinema technology. In addition to Dolby Digital, DTS (1991) was one of the early leaders in digital sound. This operates with commercial/theatrical as well as consumer applications. the most common implementation of the format is 5.1 sound, with 2 rear channels, 2 front channels, a center channel, and a LFE channel, or subwoofer.

Sony too has developed their own format for digital audio, Sony Dynamic Digital Sound (SDDS), which has been used in over 1,400 films. It differs from the DTS and Dolby systems in that is is made of 8 channels of sound, 5 front channels, 2 rear, and a sub-bass channel. However, despite the increased number of sound channels, most films using SDDS still mix in 5.1, because few studios are equipped for 7.1 sound.

There are several new formats that are emerging, building off the successes of 5.1 sound. 10.1 ("twice as good as 5.1") is said to be the aural equivalent of an IMAX theater. 22.2 is the surround sound component of Ulta High Definition Video, using 24 speakers in multiple layers.

These digital tools have now truly freed the sound artists to create a world where sounds can come from anywhere, and move around with absolute freedom. This has also freed filmmakers to create events that exist only aurally, refining and advancing the film without depending solely on the image. As the tools continue to be refined and progress, the freedoms will continue to expand for sound in cinema.