

Fall 2014

Modern Recording Studios: Their Evolutions, Designs, and Adaptations in the Music Industry

Gregory W. Hanson Jr.
California State University, Monterey Bay

Follow this and additional works at: https://digitalcommons.csumb.edu/caps_thes

Recommended Citation

Hanson, Gregory W. Jr., "Modern Recording Studios: Their Evolutions, Designs, and Adaptations in the Music Industry" (2014). *Capstone Projects and Master's Theses*. 486.
https://digitalcommons.csumb.edu/caps_thes/486

This Capstone Project is brought to you for free and open access by Digital Commons @ CSUMB. It has been accepted for inclusion in Capstone Projects and Master's Theses by an authorized administrator of Digital Commons @ CSUMB. Unless otherwise indicated, this project was conducted as practicum not subject to IRB review but conducted in keeping with applicable regulatory guidance for training purposes. For more information, please contact digitalcommons@csumb.edu.

Greg Hanson

Professor Lanier Sammons

MPA475

19 December 2014

Modern Recording Studios:
Their Evolution, Designs, and Adaptations
in the Music Industry

ABSTRACT

Music and sound recording studios have drastically evolved since their inception. Existing in an industry dependent on the rapid innovation of technology causes demand for constant and quick adaption to changing trends, the commercial studio, once an isolated trade, now competes for survival with well-maintained and affordable project studios. Because of the availability of quality equipment and more readily accessible opportunities to produce high quality finished products on a lower budget, commercial studios must adapt to trends in order to hold onto the status as a lucrative industry. This paper will combine research into the history and evolution of the commercial studio with original data collected from a variety of first-hand sources, including interviews, design analysis, surveys, and reflections to define the status of the commercial recording studio and the methods employed to maintain that status.

INTRODUCTION

The advent of recording technology and the recording studio was an evolutionary milestone in the history of music. Before the late 1800s, listening to music was a rare and engaging experience, heard only through live performance, often in places of gathering such as church or at homes fortunate enough to own a piano or other instruments (Coleman 1). Thomas Edison's 1877 invention, the phonograph, was instrumental in the development of audio recording, and it was not at all long until recording was a commercialized industry that transformed music, not only through availability, but by "changing the experience of the ear" (Chanana 1, 9).

With engineers recognizing that acoustical sciences play a vital role in recording, what was an art grew to blend with a form of precision engineering (Beranek 1). The fascination in the field amongst inventors and investors resulted in extraordinary developments. The year 1887, just ten years after Edison's phonograph, saw the birth of the first record company: the Gramophone Company. The 1900s saw increased development in transducers, including the first ribbon microphone by RCA in 1932. With the 40s came an increase in tape recording and the development of multi-tracking. The late 50s gave rise to stereophonic recording. In 1981, Phillips demonstrated the first compact disc, and 1987 witnessed the introduction of digital audio workstations in the form of Digidesign's "Sound Tools" (AES 1).

Recording technology has gifted society with more than just one luxury. While providing a source for in-the-moment leisure listening, audio recording has enabled people to document a quite peculiar history. Pre-audio recording, music had no form of documentation other than written notation or memorization. However, recording allowed a notated song to be accompanied

by an audible and exact replication of an original performance, leaving society with a wealth of materials that can be chronologically organized to help study the many different developmental paths of music history.

In addition, audio recording has found a home in many different types of media, including film and video games, which depend on the clarity of improving recording technology to increase their efficiency at enveloping realism. Audio recording has brought life to numerous fields; it is found in areas ranging from telecommunications, to alarm clocks, to even medical advancements such as hearing assistance. While this study may pertain mostly towards music reproduction, there is no questioning the vastness and importance that audio recording has achieved in modern society.

As it relates to music reproduction however, audio recording equipment has seen a drastic increase in affordability and availability in more recent years. What was once a trade found only behind the closed doors of established recording studios has now found its way into the homes of avid music creators ranging from novice engineers to experienced musicians. Fully functioning studios can be had for a rather reasonable price tag. Apple Inc. offers a bundled package, including a computer, monitors, an audio interface, microphones, and software, for just \$999 USD (Apple The Complete Recording Studio with Mac Mini). Much cheaper options are also available, and as sales of these pieces of equipment increase, the cost to quality ratio continues to decrease.

With the availability of such products on consumer-level markets, musicians of all calibers have a choice about the expenses they are willing to incur to complete a production. Since the process of creating music is so subjective and widespread, it is common for a musician

to self-produce their music to avoid the cost associated with a large, commercial studio.

Frequently, songwriters operate out of a project studio, as capturing their created materials is a beneficial compositional tool. Artists who are looking to document their work on a budget can turn to a reputable project studio to create a worthwhile demo at a fraction of the cost associated with a commercial location.

The secrets of the recording studio trade are being exposed more over time. As technology advances and the development and production of materials becomes cheaper and more affordable, more people are able to recreate results similar to what can be done in a commercial studio. However, there is still an industry revolving around the use of the recording studio, involving both the recording of music, as well as other sound design projects like dialogue capture and voice overs. Commercial studios still draw clients for a number of reasons. Often times, these locations are leading investors in technology. Over time, they become collectors and operators of significant amounts of professional equipment. They are also often equipped with dedicated spaces for recording, which are either designed for acoustics or treated to accommodate them. In addition, professional studios often operate within an established network of influential industry members (Halaby 1).

Commercial studios are challenged to meet the demand of clients who are often interested in the most advanced, up-to-date and efficient technologies. As a result, the developers of these equipments are constantly innovating, which in turn, benefits the industry as a whole. Commercial studios are the consumers of professional grade equipment. Single individuals can rarely afford to purchase this level of equipment. Thus without the commercial studios who are

financially invested in the industry to purchase them, the demand for their development would come solely from the consumer market.

This focus of skilled individuals helps to create a center of knowledge specific to the studio. The field of audio engineering, though definitely growing in size, is still a slightly secretive trade. These workplaces provide opportunity for growth in the creative world as well as the scientific world. Engineers are a mixture of scientists and artists. They combine their knowledge of acoustics, a physical, real-time phenomena, and several other sciences, such as electricity and computer technology with the subjectivity of musical composition.

Recording studios are the focal points of development in this field. They facilitate and promote developments as well as support an industry based on art. However, to maintain such an important role, recording studios must continue to draw clientele. This group of clientele is extremely varied in needs, wants, and ability. As discussed above, studios are challenged to be able to keep up with this demand in several different manners, including technology, availability, and adaptability. This paper will attempt to define these operations, and through empirical research, provide insight on what clients demand and how commercial studios work to meet these demands.

ADVANTAGES TO THE COMMERCIAL STUDIO

High fidelity audio is becoming more and more desirable in the consumer market. Audiences are gradually becoming more aware of poorly produced sound. But the qualifications for being recognized as an audio engineer are becoming increasingly less strict. By modern standards, the only qualification to be considered a recording engineer is the ownership of recording equipment (Mixerman 56).

The lowering of these standards usually results in increased difficulty in evaluating the legitimacy and effectiveness of certain individuals. This is the first distinct advantage to the commercial studio. In a 2013 public survey on recording studios, 79% of 92 respondents reported the experience of staff to be one of the highest held standards in choosing a location to record (Hanson). While it may not play in favor for the aspiring engineer, there is no doubt that the technicians who hold the position of lead engineers at renowned studios are there because they know their job. Undoubtedly, these individuals got to the top after gaining years of experience working in the field, and most likely with that same studio. In essence, qualifications to become a recognized engineer at an equally recognized recording studio are far more strict than that of a project studio operator.

This is by no means to say that project studios cannot be workstations for talented individuals. Obviously, the process of determining a “good” recording, mix, or master is rather subjective process. It very well may be that a project studio has excellent workmanship, but the commercial studio can often prove it. An established studio, as well as the project studio, will develop a portfolio over its years of existence. The difference between the two portfolios will be determined by the success of the work. Aside from the investment security that comes with

experienced staff, there are many different reasons for a band to be recorded at an established studio.

Location and acoustics are next on the list. In the same public survey, locations and acoustics ranked in the top four most important factors (Hanson). Artists who are serious about creating a high-end production at least recognize the importance of acoustics. Acoustics, by nature, are unique to locations. At times, there are desired sounds that cannot be acquired by recording in a room designed for its specific purpose. Radiohead's 1997 album *OK Computer*, was recorded at locations that most would consider to be not ideal, including a converted shed and British mansion. However, these locations were chosen for their uniqueness as it pertains to acoustics, thus serving as an exception. Established recording studios often boast the availability of specifically designed and tuned live rooms for recording.

Some famous examples are the three live rooms that compose Abbey Road Studios in London, United Kingdom. The location's "Studio One", is advertised as being able to accommodate ensembles of over 200 people, while simultaneously referring to the "warm and clear sound" that is a result of the space's design (Studio One). Studio Three of Abbey Road is advertised for its design which reveals a "natural and flexible acoustic" (Studio Three). These studios were designed to accommodate the different aspects that are found in recording.

Treatment, much different from soundproofing and isolation, revolves around enhancing the pleasing aural aesthetics that are characteristic to a single environment. Treatment usually works to try to tame, or in some cases encourage, a room's natural reverberations and reflections ("the liveness") while also working to pull out the room's "coloration." Furthermore, these spaces are often designed with the trait of isolation in mind.

In music recording, isolation has two sides—keeping it in as well as keeping it out. The former maintains its importance to allow the studio to operate during whatever chosen hours without disruption to the outside world. Noisy businesses often are subjects of complaints from neighbors and may be as much of a hindrance to production as sound leaking into the area. In a well designed studio, isolation and treatment are combined to create a room that is ideal for recording sound. While there are exceptions to the rule when searching for original sounds, often times recording studios can guarantee an aesthetically appealing recording because of the design of these rooms. These locations provide the option of capturing an acoustically tuned environment, as opposed to acoustically compromised environments such as bedrooms or other converted living spaces.

To parallel the complex design of live rooms comes the control room. Control rooms are the center of operation for the studio. The first notable aspect behind the control room design is the equally complex effort that goes into designing acoustics for a room that revolves around loudspeaker use. Managing the acoustics of a room to develop a proper monitoring environment include deadening reflections, preventing standing waves and other frequency build-ups, creating a proper stereo or surround image, and controlling the noise floor that is created from the amounts of electrical equipment. Professionally designed control rooms are created with listening sources and positions kept in mind. Once the “main monitors” are decided upon, in both model and position, the room can be designed to properly accommodate all of the above aspects that would contribute to an even listening environment (Frazenda 7).

Problems that exist physically in a mixing environment are often translated into the mix in the form of incorrect compensations. For example, a mixing environment that has an over-

representation of high middle and high end frequencies may result in a mix that is lacking that content in other environments. As such, a misleading environment can result in mixes never reaching a balanced point.

Commercial studios will consider the repercussions of a poor control environment in their design. Often times, studios will include separate mixing studios in addition to tracking control rooms to further accommodate the task of mixing. Mastering often falls under the jurisdiction of a completely different studio as well. Project studios are often most at risk in this aspect. While some of the components a poor live room can be avoided by methods like close microphone technique, the flaws in a mixing environment are more difficult to correct.

As equally advertised as the space and people that make up a recording studio is the equipment. Exclusivity in professional equipment design is quite common in the recording industry—a concept that provides value to “vintage” gear and gives certain locations a marketing angle. A famous example was the design and construction of a series of recording consoles from Focusrite Ltd.. The company designed and constructed a series of large format consoles, consisting of two models, the Forte, and the Studio, with exceptionally small manufacturing counts of 2 and 10, respectively. The consoles, which are now even fewer in existence, gave certain locations an attraction that other studios lacked.

Another excellent example of equipment exclusivity in recording studios was Sound City Studios in Van Nuys, California. The location was notable for owning one of four Neve 8027 recording desks. A 24-track analog console, the original design was a result of a custom order from the studio owners and was originally purchased for \$75,175. The studio operators and a large amount of its clients credited the success of the studio to the quality of sound provided by

that single piece of equipment (*Sound City*). While not all locations advertise as expensive or rare pieces of equipment like the 8027, serious clients are aware of the grades of equipment that are available for use.

“Variety of recording equipment” was ranked as the third most important aspect in choosing a recording location in the same survey, falling just behind cost (Hanson). While there is a stigma surrounding the concept of having equipment and not knowing how to correctly use it, providing clients with options during the recording process is often both marketable and helpful in acquiring the sound that the client is striving to achieve. Famous pieces of equipment such as the Nuemann U87 condenser microphone or compressors such as Teletronix LA2A are often recognized by artists as desirable components in developing a tone. Clients are frequently more inclined to gravitate towards options in recording and the availability of choices in equipment can often promote a more creative environment.

CHALLENGES FOR THE COMMERCIAL STUDIO

When digital recording technology was introduced, the entire attitude of the recording industry began to shift. The interactions and qualities that made a location notable were less desirable as artists and producers instead wanted to capture as clean and crisp of a sound as possible, leaving defining aural traits to be introduced as a separate aspect later on in the production (Gibson, 198). Additionally, converting an entirely analogue studio to be capable of digital recording required expensive infrastructure and a new learning curve to overcome. The investment of time in learning a space and understanding the acoustics became subpar to understanding how to enhance the audio in the digital realm. Studios that opted out of the digital

revolution started to struggle, being held back by the costs of maintaining an analog world (Gibson, 198-199). The recording industry was revolutionized by computers—in ways both good and bad.

Just like any other business, the industry has become somewhat dependent on the functionality of software (Leyshon, 1310). The introduction of Pro Tools in 1991 set a new standard of recording capabilities. No longer were engineers tied to the laborious efforts of working with tape. Recording, editing, and automated mixing could be done digitally with computer hard-disk audio that outputted in an entirely digital format (Cook, 2).

Enter the MP3. MPEG 1—Audio Layer 3 (MP3) was a game-changing compression technology. Near CD quality audio could now be stored digitally without taking up physical space. And while the MP3 made way for an entire new method of music listening (MP3 players, Internet Radio, etc.), it also created the potential for piracy. Existing as an unprotected format meant that the industry had no way of tracking an MP3's use (Garofalo, 350).

As such, there is little to be done about the already vast amount of MP3s available for immediate download on the internet. Efforts have been made by multiple distributors to encode online music with Digital Rights Management, but it is often met with backlash and discontent by the user. This becomes a concern for the industry as DRM is supposed to help facilitate online music distribution as opposed to hindering it and promoting consumer boycotts (Kwok, 18).

However, the MP3 and online music sharing did not only affect the industry through the enabling piracy. It created the potential for artists to connect directly with consumers (Garofalo, 349). Artists can now create an excellent recording and distribute it online directly from them, or indirectly through an independent aggregator. Modern online music stores like CD Baby and

Bandcamp promote the abandonment of record labels for contract-free, fee-based distribution of digital music. While it may be argued that these sales affect record labels, it would be incorrect to assume that recording studios are free from any negative effects, too.

In the same spirit of independent labels and distributors, artists are also turning to self-produce their music. Smaller, independent studios have become a much preferred option as artists try to cut down on production cost and gain more profit from their revenue. Additionally, some genres, such as electronic dance music can be fully produced digitally in inexpensive home studios (Gibson, 199). But digital recording has not only had an effect on recording outside of the commercial locations.

Implementing the digital realm into recording studios has had a serious hand in change for the production methods behind making a recording in the studio. After the initial investment in converting to digital interfaces, production cost can be potentially lower. The medium for recording in itself has dropped significantly in cost. A terabyte external hard drive, which could allow for nearly 1000 hours of two track uncompressed audio, can be purchased for prices as low as \$69.00 (WD My Passport Ultra 1TB). That much storage in 2" tape is equal to five million feet. By today's prices, 2500' of 1/2" tape has an average price tag of around \$100 (ATR Magnetics ATR30907). It would cost close to \$100,000 if both sides of the tape were used. In addition, recording to tape used to take significantly more time. Setting up a reel-to-reel device was a process much more delicate than plugging in a USB external hard drive. Additionally, digital editing has completely reinvented the recording process. As explained by renowned engineer Steve Albini, "the main attribute of digital recording is that it's very quick and very easy to manipulate it." Artists no longer have to spend as much time rehearsing in or

out of the studio. The advent of pitch correction means vocalists are no longer required to record takes over and over again until it is perfected. Engineers no longer need to spend hours physically cutting and pasting sections of tape to mend a take. Instead, a mouse and keyboard allows for more precise editing than ever before—and it can be done instantaneously. An entire project now, as noted by Chicago Recording Co. general manager Chris Shephard, “takes half as long as it did 10 years ago even as the per-hour rate hasn’t risen” (Caro).

To open a recording studio in the modern day would be no small task. And furthermore, it would almost certainly need to be digitally centered. Albin, who operates an entirely analog studio, and holds a certain disdain for digital recording, reflects on owning his studio as a rarity. “...It’s almost impossible to make money as a studio owner now. If I were to open this studio now, there’s literally no way I could do it profitably” (Caro). While the concepts and challenges to operating recording studio are all similar, it is true that not all studios operate under the same business model. Diving into the business models of a couple of independent studio owners may help to better clarify their successes in the recording industry.

STUDIOS AND THEIR OWNERS

Developing a firm understanding of a recording studio’s operations is done best by studying the methodology of existing studios. While a lot of studios do operate under similar principles, the individual qualities of each location are really dependent on the mannerisms of the owners and operators. Similar to any business, different recording studios operate with different policies, so each location may be independently successful.

MARS (Music Arts Recording Studios) located in Aptos, California is an excellent example of a long standing recording studio. Dating its start all the way to 1975, Mars' owner, Ken Capitanich credits his success to abiding by a specific set of business model practices, as well as maintaining standards of excellence in his studio. In an interview with Capitanich, he was able to explain some of his business practices, which revolved a lot around his wholesome approach to marketing and networking. Capitanich explained that he was able to garner customers through his marketing methodology— “give something and you get something in return.” He expanded on this concept by explaining that he would often offer potential cliental free recordings, and in turn, he creates a new business relationship between them. Capitanich found that a lot of his clients could be drawn from local networking. He created close ties with the community, sponsoring local competitions, schools, and other non-profit music organizations to scout for new artists. While Capitanich has been able to stay afloat as a recording studio, his establishment was not secured overnight. “Running a studio is hard starting out. It was slow for me,” Capitanich explained.

Capitanich also places a strong emphasis on equipment, explaining that having good microphones is a big draw. But it is not all about equipment and ability. Studio presentation and hospitality plays an important role at Mars. Capitanich strongly emphasized that comfort is really a factor in not only contracting clients, but keeping them as well. Part of that comfort comes from keeping a well maintained space. Flexibility, ease of use, and efficiency rank as the top three qualities Capitanich upholds in his studio, alongside a strict no smoking rule.

Capitanich made sure to explain how the “internet has changed everything.” Modern distributors want little to do with artists until they are popular, making it a little more difficult to

contract smaller artists when they have little income. But the internet has also provided him with recording business that is not necessarily music-dependent. Corporate calls and recording work for television shows and commercials are welcomed frequently at Mars, along side other less-musical content such as voice overs and book on tape (Capitanich).

Matt Muncie, owner and operator of Moondog Studios of West Covina, has similar and different outlooks on working in the recording industry. Muncie's 51 years of recording has left him with valuable insight on the recording process. With a large collection of equipment, and an analog based recording studio, Muncie has engineered eight different albums in just the past three years—a sign of success for a small studio.

While Muncie recognized the importance that equipment plays in crafting a good recording, he places more credit on his experience and understanding of the art, and even more credit on working with good musicians. Muncie, who started recording bands as a teenager, first worked with a reel to reel tape machine. As digital recording started becoming more accessible, he embraced the new equipment and worked with it for a decade at the start of the millennium. Unhappy with the results, and upon his return move to California, Muncie decided to establish Moondog Studios as a 24-track analog studio. Muncie prefers to record rhythm sections together, advocating it as a benefit to the performance characteristics of a recording. However, with his system, editing is not very accessible, so Muncie advocates single take performances, thus further underlining the importance of skilled musicians in a recording.

Aside from experience, Muncie believes there are several other important factors to consider when operating a recording studio, of which comfort ranks the highest. He explained that, "From what my customers say is that they are comfortable... it's like a living room... the

clientele likes to be comfortable, and if they feel comfortable they play better.” Ventilation, air conditioning, and spaciousness all play a role in how well the studio is received. Muncie also advocates having a solid back line, especially to accommodate musicians when the space is used as a rehearsal location instead of recording. “Having multiple options of amplifiers... multiple speaker configurations... offer them whatever they want.” In addition to instruments, he also believes in the importance of microphones explaining that they are “only second to good musicians.” Through it all, however, Muncie still believes experience is the most important aspect to recording, and the best quality of his studio. “All those little things factor in... the most important thing is to listen with your ears, that’s the very most important thing,” he explained.

In studio where most of the business is contracted through word of mouth, Muncie believes it is important for the product to be heard and receive feedback. Similar to Capitanich’s “give and receive” approach, Muncie also believes in providing materials for free. “Listen to what other people say [about the recordings]... Give your CDs out... Get them in people’s hands... Get feedback from them...” By doing so, Muncie is able to contract business and secure returning clientele, explaining that often times, after a good experience there, clients continue to come back.

Muncie still believes in the role and importance of the recording studio. When asked how exactly his studio still operates and what draws clients, he responded:

“I haven’t figured that out, yet... I think that somebody... like myself, I’ve got 51 years of experience.... I can probably mix better than somebody who just bought a ‘portastudio’ and is still reading the instructions... I started out that way... I got stuff that sounds good, but the better the equipment... the ear... the monitors.... the control room... you’re kind of limited with a little hundred dollar recorder or an iPad with some kind of software or an app that you downloaded. It’s going to work but it’s not up to the quality that a real recording studio that’s set up to record, you know, isolation booths and

good microphones are vital. When you have good musicians it makes your recording so much easier. because you're not trying to have to dress it up after it's done... You don't want to touch it if you recorded it right the first time when you had good session players."

While Muncie surely has had some success in his endeavors as a studio, he is still working hard to strive towards more prominent accomplishments. "I thought it would have got bigger faster," he explained. Like many other studio owners and engineers, Muncie is waiting for a hit release to help even out the weight from his many years of working as an engineer. But this does not stop him from taking pride in his work. "There's nothing wrong with having a little bit of bleed, I think it's good... There's no fixing a note here, if you get a little funny note or something, you either live with it or you do it again. And that's what makes my recordings unique... Human error." (Muncie)

BUILDING AND OPERATING A PROJECT STUDIO

To establish a functioning recording studio requires an investment of both time and money. Granted, different establishments require varying amounts of investments, as not every location will necessarily be built from the ground up. Recording studios can be erected in a variety of different locations, from bedrooms to office spaces, old warehouses, or even ranch homes.

In an effort to grasp some of the concepts behind studio design and operation, I drafted and executed plans for the renovation of a one car garage into a small sized sound recording studio. The design was drafted under restrictions similar to what may be encountered in a larger-scale operation. Not including recording equipment, the entire renovation was to be completed

under a budget of \$3,000. (Actual cost fell just below that at \$2921.33). Since I performed all the labor tasks on my own, this budget was mostly reserved for building supplies. The design included plans for isolation, space, and acoustical planning and treatment.

Since the location of the to-be studio was to exist in a residential neighborhood, isolation was of utmost importance to keep neighbors happy and allow recordings to be worked on freely at anytime. The design's first draft called for the most ideal structure, a "room in a room." That is that the live room would be built completely independent from the existing walls. This design would promote isolation by increasing both the amount of materials that sound would have to travel through (wall, air, wall) as well as distance. Unfortunately, that also meant double the cost of materials, so the design was revised.

The revision allowed for two shared walls, and two isolated. Since the isolated walls would have the same effect, as if they were built as a "room in a room" no extra effort was put into their design. The shared walls, however, had an increased amount of insulation. In addition to the R19 Fiberglass insulation that was used in the the rest of the garage and the isolated walls, the shared exterior walls received sheets of R4 rigid insulation foam boards. Thus, the shared exterior walls provided a bit more resistance for sound to travel through, by starting with painted sheetrock, insulation foam board, R19 fiberglass insulation, plywood substrate, and finally a finishing layer of plaster.

I equipped the room with its own 120v circuit, placing outlets on three out of the four walls, and allowing all electrical draw to be in phase, preventing any potential electrical shock to performers or damage to expensive equipment. Lighting was accomplished through a central 3-bulb fixture, as well as white string lights to line the perimeter of the room to create a more

comfortable atmosphere. A modified window HVAC unit was installed as a semi-central system for room ventilation and cooling.

The room was designed with the use of overdubs in mind. Because of the limitation of space, it would be hard to comfortably fit more than two people into the room and be able to record with decent isolation. Thus, most of the location recordings would be done in an overdub setting, swapping players out of the live room when they are to perform. Since my recording setup was based on Focusrite's Saffire Pro 40, I was equipped with 8 analog inputs, 2 amplified stereo headphone outputs, and 8 more mono line outputs. This means, with the addition of headphone amplification, there was a potential for 6 headphone outputs. To accommodate for flexibility in room placement, I installed 4 1/4" TRS jacks on the ceiling in each corner of the room, which were wired to a patch panel on the wall where the control station was to be located. In addition, two more jacks were placed at that same panel, for a total of 6 1/4" TRS jacks. On the same panel, I installed 16 XLR jacks (female on the inside, male on the outside) to patch microphones to the equipment at the control station outside of the room. This setup created the potential for the multi tracking of a medium sized band.

Frequent advice for designing a recording space is to avoid the use a 6 sided cube. Unfortunately, limitations in the existing space allowed for only exactly that. Thus, extra efforts to creating a pleasing acoustical environment were taken. The likes of sheetrock and concrete flooring were not necessarily adding to pleasing acoustics. The room dimensions and specifics

were sent to Auralex Acoustics, Inc. The company's free room analysis service provided a detailed explanation of potential acoustical complications, and the best options for correction (see Fig. 1). Following these instructions, I was able to use acoustical foams to best correct any unsettling acoustic features to the room. In addition to the actual corrections that the foam made, it also contributed to the finished looked of the room.

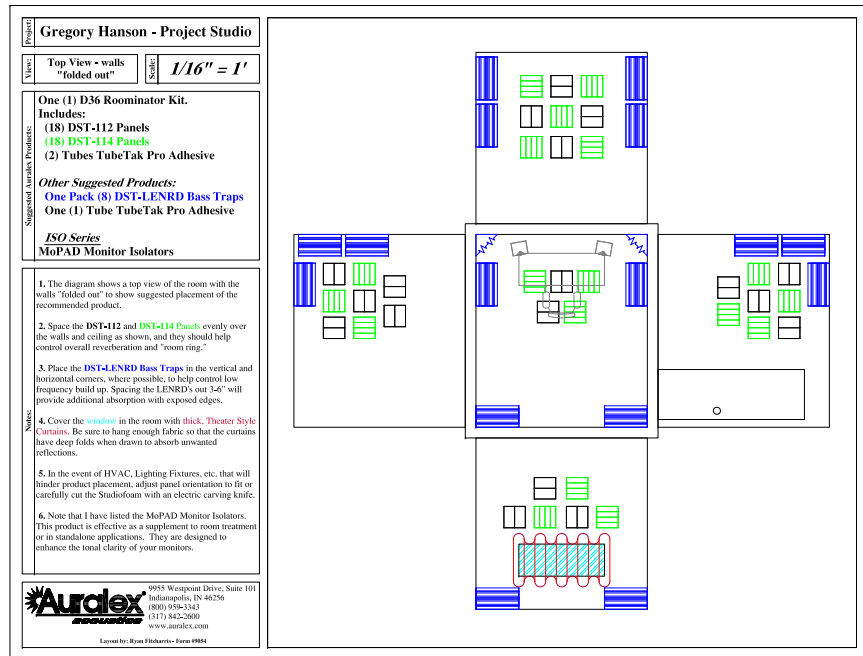


Fig. 1 Auralex "Room Analysis"

While the room's construction was completed and ready for use at the conclusion of summer 2013, the first recording sessions did not occur until the following winter. The operation of the first sessions were a little less than admirable. Unexpected trouble shooting and poor performances did not yield the best possible recording—still the client was content, as everyone maintained a good attitude and the recordings were ultimately a step up from the materials they had before. A few more paying clients were recorded that same winter, and while the content continued to improve with practice in the room, clients started to become less available.

This greatly put into perspective how difficult it would to operate this location as a business. Acquiring clients became extremely difficult after I exhausted most of my personal

network of musicians. Trying to make connections and incur business from contacts outside of that network proved even more difficult, as most musicians who were looking for locations to



record at had already worked in larger, more equipped locations. It started to become clear that appearance was a huge aspect to contracting business. Potential clients seemed to express more interest in coming to record if I

had showed them examples of recordings that came out of the location *first* as opposed to showing pictures or video.

Even though the location is moderately equipped to record, it is still part of a home garage, and often, potential clients see that aspect as a hindrance to the possibility of recording a high quality track. Often times, providing listeners with imagery of the location after listening to a recording yielded responses that were surprised of the quality of the recording coming from a garage. That stigma becomes immediately present when potential clients see the space, and unfortunately, it is not at all helpful for contracting business. Of course, the studio space received minimal advertising and all business was contracted through word of mouth promotion and social media publishing. No clients ever reached out on their own to come record—I had always offered the option.

WHY THE COMMERCIAL RECORDING STUDIO STILL EXISTS

With all the challenges and difficulties that recording studios undergo, it may be easy to think that the commercial recording studio is not long from its eventual demise. While studio business models are changing, they are not alone in their hardships. It would be hard pressed to discuss the importance and existence of the modern recording studio without also making note of the changes in the industry in which they operate. The challenges that have arisen from competing with inexpensive home recording services have also made an impact on the industry as a whole. In a similar topic discussing what steps artists need to take to reach success, CEO of the Sony Music UK Division, Nick Gatfield, reflects on the changing industry:

“It used to be a very simple business... the artist used to go in the studio, you made a record, we [the label] owned the factories, we owned the trucks who took it to the record stores... the radio, and you go and hope and pray it works. Now you’ve got to do all the ground work before you even begin to go to... mass media (The Internbook).”

These perquisites for an artist’s success with a label serves as part of the cause and effect relationship behind the diminishing population of modern commercial, recording studios.

According to data displayed in *The Music Business and Recording Industry*, by 1995, 70 percent of professional recording studios reported at least some degree of competition from home-based private production studios and 28 percent reported reported “very much” competition. In 2010, the cost of building a modern recording studio was half as expensive as it would have been two decades prior (Hull et al., 221).

It is also important to note, however, that not all commercial recording studios are on the market for entertainment music production. Six geographical US locations are centers for lucrative commercial recording studios and include New York City, Los Angeles, Nashville,

Atlanta, Chicago, and Southeastern Florida. In these locations, and with any major city with a significant population, usually over 100,000 people, it is common to find at least one commercial recording studio that often serves advertising clients, an industry that is still heavily dependent on audio production in both voice overs and music (Hull et al., 221).

The modern recording studio has slowly come to rely strongly on its professional staff as its survival practice. As noted in *The Music Business and Recording Industry*, the “diffusion of recording technology does not necessarily create more high-quality recordings, any more than the diffusion of water color paints creates more great water color paintings...” (Hull et al., 221). Surely, there is a potential for great product from the availability of those pieces of recording equipment, but that still requires the skill set of experienced individuals.

There is certainly no doubting the change that the music recording business is undergoing, in both technology and business operations. But the demand for music amongst the general public is certainly not dismissible. Different artists take innovative approaches to completing the recording, such as Dave Grohl and the Foo Fighters recording *Wasting Light* into a completely analog system in a two car garage (Doyle) or their recent *Sonic Highways* which documents the importance that different locations can have on a recording.

Frankly, however, major labels will not contract newly signed artists to record in a make-shift suburban garage studio. Established commercial recording studios still have the advantage of higher quality production because of their experience and equipment. The creativity and freedom to explore in a home studio environment is often appealing to young or unprofessional artists, but it is difficult to match the demand for quality without the investments that commercial studios have made.

An interesting approach that some modern artists are developing is to cut down on production cost by completing different stages of the recording process at different locations. Instruments that are less difficult to record, which commonly include instruments like bass guitar or smaller percussion instruments, can be tracked at an in-home studio location, leaving more important or difficult instruments like drum sets or vocals, to be recorded at a professional studio (though the importance and difficulty of instruments is extremely arbitrary, as is the entirety of the recording process). This can help artists break away from time constraints and the pressure of big recording studios.

Established recording studios are respected for their work, and often times, these locations are known to be as inspirational as any other source. In addition, their reputation can be extremely beneficial to an artist if they can say they recorded their album at the same location as the most famous Beatles' record. Commercial recording studios also help to create a demand for high-caliber musicians. Large geographical recording locations, like those previously mentioned, are often saturated with musicians because work is frequent. The relationship between recording studios and session musicians can promise a more lively work flow for both parties. These factors all contribute to a certain importance of the professional recording studio that has only become overlooked in recent years.

While it may be true that recording studios are becoming increasingly less common, this does not guarantee an end to the recording industry. As long as there is a demand for new content, then the processes for recording it will continue to exist. With the advent of crowd funding, independent artists are becoming able to grant themselves the capabilities to fund and distribute their own projects. Take for example independent punk rock artist Amanda Palmer,

who was able to successfully raise \$1.2 million dollars to fund her work—12 times her initial goal of \$100,000. The money raised was invested directly towards the production and promotion of her music (Palmer). Considering that an entire album can cost as little a few thousand dollars, Palmer's \$1.2 million may appear to be a crowning achievement. When compared to the reportedly \$1.1 million it cost to produce Rihanna's financially disappointing single, "Man Down" or the estimated \$2 million it cost to produce Katy Perry's extremely successful "Teenage Dream," it may appear insignificant (Chace). What is certain, though, is Palmer's crowd funding showed the industry is not dying, rather changing, and reinforced the fact that consumers are still expressing a demand for new content. And despite differences in investment and results, all three instances share a single, promising commonality—they were all recorded at professional studio locations.

The importance of an ideal recording location is taken into great consideration when the endgame is a hit track. Hand in hand with location sits the personnel, with emphasis placed on the knowledge of experienced audio and music professionals. The remaining large studio locations have recognized this and capitalized on it. The difference in how a studio operates now stems from where the money comes. Because labels are no longer investing in artists without an established repertoire, artists have to record on their own. When asked who funds most of the projects coming into the Chicago Recording Co., Shephard explains, "Through credit card... Its about 50/50 [artist/label]. It depends on who it is" (Caro). Steve Albini credits the continuing success of his studio on the fact that he was never funded by the big label clients that are not as frequently spending large sums of money at the studio anymore:

“The only reason that we have this studio is because we built it when we did. We get by... We’re not ringing any bells about how good the business is. Because we were never really reliant on the big ticket sessions, the fact that that business is all dried up hasn’t really affected us. Our bread and butter clientele are the working musicians that are doing stuff on their own, independently... “ (Caro).

But the key to success across all these studios is appearing in the form of adaptation and flexibility. Each location has opened its doors to working with clients who have audio needs that are not always in the most musical direction. The relationship between studios and their clients are evolving. “One of the reasons... we’ve been able to adapt, is that we’ve been really helpful to artists, helping them with what the technology is... and not hiding it as some sacred secret,” Shephard explains (Caro). Without a large label funding, artists need to be able to enter a recording location and feel comfortable, in both the environment, and knowing that they will come out with a product that they want.

Studios that are able to accomplish that reputation with their clients early on have shown that they will be able to keep the relationship profitable. Big, commercial locations like Albini’s Electrical Audio and the Chicago Recording Co., and even smaller locations like Moondog Studios and Mars show that the success in operating a studio is not impossible. Innovation, adaptation, flexibility, and diligence to the art will continue to help studios overcome their challenges, and as long as artists are writing songs—and people want to hear them—recording studios will continue to record.

APPENDIX A: Recording Studios Survey

This survey was conducted online via surveymonkey.com to collect data about individual needs and wants in a recording studio. The survey was open from 8 December 2013 to 6 January 2014 when a total of 92 responses were collected. Some questions allowed for survey takers to elect to skip the question. The following are the questions and responses:

1. Do you or have you ever had interest in paying to record sound (music, voice over, foley, etc.) ?	
Yes	72 (78.26%)
No	20 (21.74%)
2. Do you or have you ever had interest in paying to record sound at a non-commercial studio (home or project studio) ?	
Yes	47 (51.08%)
No	37 (40.21%)
Skipped	8 (8.69%)
3. If Yes, what rate would you consider paying (in USD)?	
\$10.00-\$20.00/hr	11 (11.95%)
\$20.00-\$30.00/hr	18 (19.56 %)
\$30.00-\$40.00/hr	11 (11.95%)
\$40.00-\$50.00/hr	10 (10.86%)
\$50.00-\$60.00/hr	5 (5.43%)
\$60.00-\$70.00/hr	4 (4.34%)
\$70.00-\$80.00hr	2 (2.17%)
\$90.00-\$100.00/hr	1 (1.08%)
\$100.00 or more per hour	3 (3.26%)
I am not interested in paying to record sound at a non-professional commercial recording studio	26 (28.26%)
Skipped	20 (21.73%)

4. Do you have or have you ever had interest in paying to record sound at a professional, commercial recording studio?	
Yes	63 (68.47%)
No	19 (20.65%)
Skipped	10 (10.86%)
5. If yes, what rate would you consider paying (in USD)?	
\$10.00-\$20.00/hr	3 (3.26%)
\$20.00-\$30.00/hr	8 (8.69%)
\$30.00-\$40.00/hr	12 (13.04%)
\$40.00-\$50.00/hr	9 (9.78%)
\$50.00-\$60.00/hr	18 (19.56 %)
\$60.00-\$70.00/hr	9 (9.78%)
\$70.00-\$80.00/hr	9 (9.78%)
\$80.00-\$90.00/hr	9 (9.78%)
\$100.00 or more per hour	13 (14.13%)
I am not interested in paying to record sound at a professional, commercial recording studio.	13 (14.13%)
Skipped	16 (17.39%)
6. When choosing a location to record, what factors are MOST important to you? (Please choose all that apply).	
Accommodation (Hospitality, Etc.)	28 (30.43%)
Availability (Operating Hours, Booking time, etc.)	34 (36.95 %)
Availability of Analog Equipment	33 (35.86 %)
Availability of Digital Equipment	19 (20.65%)
Building Aesthetics	12 (13.04%)
Cost	53 (57.60%)
Experience of Staff	55 (59.78%)
Location	29 (31.52%)

Mixing and Mastering Servies	28 (30.43%)
Recording Flexibility (Inputs, outputs, etc)	26 (28.26%)
Reputation (who has recorded there, word of mouth, etc)	28 (30.43%)
Rehearsal Space	11 (11.95%)
Variety of Digital Audio Workstations	3 (3.26%)
Variety of Instruments	15 (16.30%)
Variety of Recording Equipment (consoles, microphones, sound capture)	46 (50.00%)
Comments:	<ul style="list-style-type: none"> - "Acoustics of the room" - "I like to hear recordings from the studio in questions and listen to mixes and sound quality" - "Venue acoustics! If this is not right for the job nothing else matters, and if it is what I need I can easily hire gear." - "recording space (not rehearsal space)" - "room acoustics" - "sufficient studio area" - "Size and sound of live room" - "Amplifiers on hand"
Skipped	23 (25.00%)
7. When choosing a location to record, what factors are LEAST important to you? (Please choose all that apply).	
Accommodation (Hospitality, Etc.)	17 (18.47%)
Availability (Operating Hours, Booking time, etc.)	4 (4.34%)
Availability of Analog Equipment	10 (10.86%)
Availability of Digital Equipment	14 (15.21%)
Building Aestehtics	34 (36.95 %)
Cost	2 (2.17%)
Experience of Staff	4 (4.34%)
Location	18 (19.56 %)
Mixing and Mastering Servies	11 (11.95%)
Recording Flexibility (Inputs, outputs, etc)	15 (16.30%)
Reputation (who has recorded there, word of mouth, etc)	20 (21.73%)

Rehearsal Space	36 (39.13%)
Variety of Digital Audio Workstations	32 (34.78%)
Variety of Instruments	30 (32.60%)
Variety of Recording Equipment (consoles, microphones, sound capture)	4 (4.34%)
Comments:	-“if the place as the right acoustics for what I need I can hire whatever makes sense for the job.”
Skipped	23 (25.00%)
8. When recording at a certain location, which factors do you find most beneficial? (Please choose all that apply).	
Lounge Area	16 (17.39%)
Space (Live room, isolation rooms)	53 (57.60%)
Studio Network	11 (11.95%)
Technical Crew	44 (47.82%)
Skipped	24 (26.08%)
9. When recording at a certain location, would you pay to have your materials mixed and/or mastered at the same location?	
Yes	37 (40.21%)
No	13 (14.13%)
Unsure	18 (19.56 %)
Skipped	24 (26.08%)

WORKS CITED

AES. "An Audio Timeline." *Audio Engineering Society* (1999) Web. 10 November 2013.

"Apple the Complete Recording Studio with Mac Mini." *Musician's Friend*. n.p., n.d. Web. 12 January 2014

"ATR Magnetics ATR30907." *Fullcompass*. n.p., n.d., Web. 7 December 2014.

Beranek, Leo; Mellow, Tim. *Acoustics: Sound Fields and Transducers*. Waltham, MA: Academic Press, 2012. Print.

Capitanich, Ken. Personal Interview. 2 February 2014.

Caro, Mark. "Last Recording Studios Standing in Chicago." *Chicago Tribune*. 8 August 2014. Web. 7 December 2014.

Chanan, Michael. *Repeated Takes: A Short History of Recording and its Effects on Music*. New York, NY: Verso, 1995. Print.

Chace, Zoe. "How Much Does it Cost to Make a Hit Song." *NPR*. 30 June 2011. Web. 4 December 2014.

Chace, Zoe. "Katy Perry's Perfect Game." *NPR*. 20 January 2012. Web. 4 December 2014.

Coleman, Mark. *Playback: From the Victorla to MP3, 100 Years of Music, Machines, and Money*. Cambridge, MA: De Capo Press, 2005. Print.

Cook, Frank D. *Pro Tools 10 Power!: The Comprehensive Guide*. Boston, MA: Course Technology, a part of Cengage Learning. 2013. Print.

Daley, Dan. "Off the Record: When is a studio not a studio?" *Sound on Sound*. June 2011. Web. 5 October 2013.

Daley, Dan. "Off the Record: Two grassroots oranisations show how their focus on the local music scene is helping studios survive in the new economic climate." *Sound on Sound*. February 2011. Web. 5 Oct 2013.

Doyle, Tom. "Foo Fighters: Recording Wasting Light." *Sound on Sound*. June 2011. Web. 17 Nov 2014.

Fazenda, Bruno, and W. J. Davies. "The views of recording studio control room users." *Proceedings of the Institute of Acoustics* 23.8 (2002): 1-8.

Garofolo, Reebee. "From Music Publishing to MP3: Music and Industry in the Twentieth Century." *American Music* 17.3 (1999): 318-354. Web. 17 Aug 2014.

Gibson, Chris. "Recording Studios: Relational Spaces of Creativity in the City." *Built Environment* 31.3 (2005): 192-207. Web. 17 Aug 2014.

Halaby, Chris. "10 Reasons We Need Commercial Studios." *KVR Audio* (2013) Web. 9 December 2013.

Hanson, Greg. "Recording Studios." Survey. Web. 12 January 2014.

Hull, Geoffrey P., Hutchison, Thomas, Strasser, Richard. *The Music Business and Recording Industry, Third Edition*. New York, NY: Routledge, 2011. Print.

The Internbook. "How To Make It-Music Industry. (Extra Tips-Nick Gatfield, Sony Music)." Online Video Clip. YouTube, 24 Oct 2013. Web. 17 Nov 2014.

Kwok, Sai Ho. "Digital Rights Management for the Online Music Business." *ACM SIGecom Exchanges* 3.3 (2002): 17-24. Web. 17 August 2014.

Leyshon, Andrew. "The Software Slump: digital music, the democratisation of technology and the decline of the recording studio sector within the musical economy." *School of Geography*, University of Nottingham, December 2007. Web. 5 October 2013.

Mixerman. *Zen and the Art of Mixing*. Milwaukee, WI: Hal Leonard books, 2010. Print.

Muncie, Matt. Personal Interview. 12 October 2014.

Newell, Phillip. *Recording Studio Design*. Oxford, UK: Focal Press, 2003. Print.

Palmer, Amanda. "Amanda Palmer: The new RECORD, ART BOOK, and TOUR." *Kickstarter*. Kickstarter, Inc. 2012. Web. 5 Dec 2014.

Putnam, Milton T. "A Thirty-five Year History and Evolution of the Recording Studio." *Audio Engineering Society* (1980) : 1-14. Web. 5 October 2013.

Light, Alan, and Tyrangial, Josh. "All-Time 100 Albums." *Time Entertainment*. Time Mag. 27 Jan 2010. Web. 10 Jan 2014.

Sound City. Dir. Dave Grohl. Variance Films, 2013. DVD.

"Studio One." *Abbey Road Studios*, Universal Music. n.d. Web. 12 January 2014.

“Studio Three”. *Abbey Road Studios*, Universal Music. n.d. Web. 12 January 2014.

“WD My Passport Ultra 1TB.” *Amazon*. n.p,n.d. Web. 7 December 2014.

Zak III, Albin J. *The Poetics Of Rock: Cutting Tracks, Making Records*. Los Angeles, CA:
University of California Press, 2011. Print.