University of Central Lancashire

MODULE ASSIGNMENT SPECIFICATION

Student name	Luke Nelson	**Student ID number**	G20595254
Programme	BSc Hons Media Production		
Module	Audio 2	**Module level (4, 5, 6)**	5
Module code	TE2071	**Contribution to overall module assessment (%)**	40%
Lecturer	Jim Ingham	**Internal verifier**	Martyn Shaw
Assignment title	Multi-track Recording and Mixing	**Assignment no. (x of x)**	1 of 3
Hand-out date	22 September 2014	**Submission deadline(s)**	12 December 2014
Formative feedback date	24 November 2014	**Grade and summative feedback date**	5 January 2015

Referencing	In the main body of your submission you must give credit to authors on whose research your work is based. Append to your submission a reference list (that indicates the books, articles, etc. that you have read or quoted in order to complete this assignment) using the Harvard system.
Disclosure	**I declare that this assignment is all my own work and that I will acknowledge all materials used from the published or unpublished works of other people. All references have been duly cited.**
Student's signature	*Assignments without a Turnitin submission will not be accepted without a signature here.* **Date**

	YES	✔
An electronic version of the assignment is to be submitted through Elearn / Turnitin.	**NO**	

Learning Outcome(s) tested (from module descriptor)	Assessment Criteria To achieve each outcome a student must demonstrate the ability to:
(1) Demonstrate skills in multitrack recording of multiple sources at different times (2) Demonstrate skills in mixing multitrack recordings to a given specification. (3) Evaluate the need for and operation of typical studio equipment such as compressors, gates and reverb units	Make use of skills gained at level 4 of basic sound recording and microphone techniques. Configure a recording suite, including routing of inputs to individual tracks with the correct levels and no crosstalk. Monitor a recording as it is being made. Multitrack record, including recording of subsequent tracks whilst playing back earlier ones via the monitor section. Send a foldback signal to headphones for a vocalist.

	Add reverb to the foldback without recording it.
	Use of compressors.
	Mix down to stereo via the channel sections.
	Plan your recording carefully and to experiment with mixdown using the various effects available

This form (ALL PAGES) MUST be inserted at the front of the paper or digital submission.

TASK DESCRIPTION

You have the following equipment available:

Multi-channel mixing desk	digital recorder	power amplifier	microphones
loudspeakers	reverb/effects		
headphones	drum machine	keyboard	

In addition to being able to carry out a multi-track recording, you must use the following facilities:

- foldback to the performer with effects, whilst recording without effects

- compression for vocals

- monitoring of the recording

- no crosstalk between tracks (i.e. tracks kept separate)

- application of effects at mix down

Submission Requirements

(i)   **Pro Tools Folder submitted via Fast Folders.** This should include two Folders – *Recording Folder* and *Mixdown Folder*. The Recording Folder should have the final Pro Tools session prior to the mixdown stage. The *Mixdown Folder* should have the final session file. The recording session file should be appropriate levels from microphones and instruments. The mixdown session file should have an appropriate mix between the sources. The session folder should be well structured and good working practices evident. Various effects should be used appropriately. For example a compresser should be used on the vocals. There should be appropriate routing and foldback (with reverb for the vocalist). The final mixdown should be present with appropriate effects (such as reverb) / mastering / dynamic range / stereo image. The report will be referred to in order that we know what you were trying to achieve. **As well as importing your bounced tracked back into your session file (Print Out) you should also Bounce to Disk your track as an external 16 bit stereo interleaved .Wav file – ie CD standard.**

(ii)   The report (typically 8 pages, including diagrams and references) will detail discussions about the equipment you have used (see above). Report submitted via TurnItIn.

GUIDANCE FOR STUDENTS IN THE COMPLETION OF TASKS

The recording should last approximately 3 minutes. It should be a multi-track recording of some music and this is to be mixed down. The music should include at least 4 sources recorded separately e.g. a drum machine, synthesiser, guitar and vocal microphone. There must be a mix of electronic and acoustic instruments and at least one vocal track.

One of the instruments should be one of the virtual plug-instruments built into Pro Tools. There should be at least 3 external sound sources and one internal sound source from Pro Tools.

When compressing the vocals you should have two versions. One done with outboard effects (a hardware compressor external to Pro Tools). The other done with an internal compressor built into Pro Tools.
Notes of all equipment settings should be kept in a logbook to enable the set-up to be repeated, if desired. Settings can also be noted down with notes within Pro Tools. Photographs and screenshots can also be used.

The 'stereo image' that you are trying to achieve should be carefully thought about and documented. When the work is being assessed, reference will be made to your description of what you were trying to achieve and how you went about it, as well as the final result.

You should attempt to use the effects in a creative manner and will be given some guidance on how particular effects may be achieved. You should write about what did and did not work, even if it does not appear in the final mix.

MARKING CRITERIA

This section details the assessment criteria. The extent to which these are demonstrated by you determines your mark. The marks available for each criterion are shown. Feedback will be provided within 15 working days to comment on the achievement of the task(s), including those areas in which you have performed well and areas that would benefit from development/improvement.

Principles of assessment applied	Weight %	Grade %
Knowledge and understanding		
The work demonstrates knowledge and understanding of the use of a multi-track recording studio.	**20**	
Critical analysis		
Appropriate analysis of using a multi-track recording studio	**15**	
Application to design and synthesis		
Two Pro Tools Session Folders – (Recording Folder + Mixdown Folder).	**45**	
Evaluation and conclusions		
Conclusions made of the effectiveness of the recording, mixdown and use of a multi-track recording studio	**10**	
Referencing and supporting evidence		
Breadth of research of exemplar work and techniques. Referencing of all sources.	**5**	
Oral communication		
Not assessed	**x**	
Written communication		
Standard of written English and structure of the report.	**5**	
Group work		
Not assessed	**x**	
TOTALS		
	100	

PRINCIPLES OF ASSESSMENT

Class	Knowledge and Understanding	Critical Analysis	Application to synthesis / design	Evaluation and Conclusions	Referencing / Supporting evidence	Oral Communication	Written Communication	Group Work
Class 1 (Excellent) 80-100	Clear demonstration of an intuitive understanding of the subject matter encompassing a broader spectrum than taught material.	Succinct, well explained and intuitive analysis, showing a broad and deep knowledge of the subject area.	Full and inventive response, innovative and diverse. Fully realized.	Independent evaluation of material covered demonstrating familiarity with the work of others. Clear conclusions with awareness of the limitations of theory and practice within a body of work.	Exceptional quality and amount drawn from all relevant areas. Well argued and constructed literature survey which is both up to date and contains sufficient historical detail.	Purposeful and expansive. Captivating narrative style, illuminating and intriguing content, balanced and comfortable structure. Visual aids used wisely.	Publishable in a peer reviewed journal with little or no modification.	A flair shown for working with others. Able to take a variety of roles within a group with full awareness or the roles and limitations of others. Communication / collaboration that enables others within the group.
Class 1 (Outstanding) 70-79.99	Accurate factual content and clear thorough understanding shown of taught and additional material. Clear development of own ideas.	A very good analysis of the evidence / problem / arguments or other material under con-sideration. Arguments logical and structured	Very successful application of theory / knowledge to new situations. Demonstrable competence in practical / theoretical investigations.	Distinctive work, showing independent thought and ability to place a personal value judgment on a range of statements / reports. Clear and illuminating conclusions.	Excellent use of references / supporting evidence from various sources. Evidence supports the analysis and evaluation. Awareness of the limitations of existing data, theories or models.	Voice clear, well paced, confident. Outline and content very clear, relevant and informative. Narrative well structured. Visual aids very well produced and appropriate.	Excellent: almost no spelling or presentation errors. Appropriate choice of words. Good sentence / paragraph construction. Very clearly presented. Correct scientific conventions used.	Well organised management and performance of tasks. Clear delineation of roles. Excellent communication and collaboration
Class 2:1 (Above ave) 60-69.99	Accurate factual content and good understanding of most taught material. Some development of ideas.	Good analysis, well ordered and clearly presented	Generally sound application of theory / knowledge. Evidence of competence in practical / theoretical investigations.	Evidence of independent thinking and / or logical argument, with some value judgment, and some logical conclusions.	Good use of referencing supporting the content and providing insight. Some awareness of the limitations.	Voice and delivery good. Content well set out. Narrative generally well structured Good use of visual aids.	Very good: almost no errors of spelling. Good structure / construction, neatly presented. Readable style.	Evidence of management and performance of tasks. Some delineation of tasks. Good communication and collaboration.
Class 2:2 (Below ave) 50-59.99	Adequate factual content and understanding of most taught material. Some limitations apparent.	Some analytical treatment but may be prone to description, or too narrative, and lacking clear analytical purpose.	Limited application of theory / knowledge with some inaccuracies in work.	Development of some independent thinking. Personal views indicated in broad terms. Limited evaluation. Conclusions limited.	Some use of referencing.	Voice and delivery acceptable. Content coherent. Narrative lacking some structure. Visual aids acceptable.	Acceptable: some errors in spelling and syntax. Correct structure, style difficult to follow in places.	Some evidence of responsibility for management and performance of task. Reasonable communication and collaboration.
Class 3 (well below ave) 40-49.99	Basic recall and limited understanding of a limited range of material.	Largely descriptive or narrative, with little evidence of analytical skill.	Little evidence of application.	Standard view rather than independent view presented. Little evidence of independent thinking. Few valid or relevant conclusions.	Basic use of referencing.	Voice and delivery barely adequate. Narrative poorly structured. Content lacking relevance.	Poor: many errors in spelling and syntax. Poor structure, difficult to follow.	Poor communication with others in the group. Little attempt at organization.
Recoverable Fail 30 – 39.99	Significant gaps / omissions in knowledge. Little evidence of understanding.	Descriptive and / or paraphrased with some inaccuracies.	Insufficient evidence of application.	Significantly flawed evaluation. Some inappropriate conclusions.	Inadequate or irrelevant use of referencing.	Voice and delivery unclear Narrative unstructured. Content inaccurate.	Poor spelling and syntax. Poor structure, untidy presentation.	Little evidence of communication. Inadequate organization.
Irrecoverable Fail 0-29.99	Lack of basic knowledge necessary. No evidence of understanding	Lack of valid analysis.	Virtually no evidence of meaningful application.	No independent evaluation or conclusions.	No use of referencing.	Incomprehensible. No real factual content.	Incomprehensible. No discernible structure or meaning.	Lack of communication with others. No evidence of working as a group. Disruptive. Freeloader.

STUDENT SELF EVALUATION FORM

Student name	Luke Nelson	Student number	G20595254
Programme		Year of programme	
Assignment title	8TMulti-track Recording and Mixing		

This section repeats in brief the principles of assessment detailed on previous pages. The extent to which these are demonstrated by you determines your mark. Using these criteria, tick the box that best indicates the level of achievement you feel you have achieved with regard to each of them.

Common Assessment Criteria Applied	Level of Achievement						
	REFER		3rd	2:2	2:1	1st	1st
	IRRECOVERABLE FAIL	RECOVERABLE FAIL	WELL BELOW AVERAGE	BELOW AVERAGE	ABOVE AVERAGE	OUTSTANDING	EXCELLENT
Knowledge and understanding	0-29% ☐	30-39% ☐	40-49% ☐	50-59% ☐	60-69% ☐	70-79% ☐	80-100% ☐
Critical analysis	0-29% ☐	30-39% ☐	40-49% ☐	50-59% ☐	60-69% ☐	70-79% ☐	80-100% ☐
Application to design and synthesis	0-29% ☐	30-39% ☐	40-49% ☐	50-59% ☐	60-69% ☐	70-79% ☐	80-100% ☐
Evaluation and conclusions	0-29% ☐	30-39% ☐	40-49% ☐	50-59% ☐	60-69% ☐	70-79% ☐	80-100% ☐
Referencing and supporting evidence	0-29% ☐	30-39% ☐	40-49% ☐	50-59% ☐	60-69% ☐	70-79% ☐	80-100% ☐
Oral communication	0-29% ☐	30-39% ☐	40-49% ☐	50-59% ☐	60-69% ☐	70-79% ☐	80-100% ☐
Written communication	0-29% ☐	30-39% ☐	40-49% ☐	50-59% ☐	60-69% ☐	70-79% ☐	80-100% ☐
Group work	0-29% ☐	30-39% ☐	40-49% ☐	50-59% ☐	60-69% ☐	70-79% ☐	80-100% ☐

PLEASE COMMENT ON AREAS IN WHICH YOU FEEL THAT YOU HAVE PERFORMED WELL	PLEASE COMMENT ON AREAS YOU FEEL THAT YOU NEED TO DEVELOP
6T	6T

Multi-track Recording and Mixing

TE2071 Assignment 1

Luke Nelson

Introduction

For this assignment, using Pro Tools to create a multi-track recording in a full studio environment, we did a cover of Alive by Hillsong Young & Free. Instead of covering the regular studio version[1], which heavily features electronic instruments, we decided to cover an an acoustic version of the song[2]. Our group's strength is not in electronic instruments so this made sense. It also meant we could work with Nathan and Enya, some talented friends of mine who already know the song and also with Phil, a very talented drummer who picked the song up very quickly. Also, Danny was dying to sing!

This report will outline how I did the following things and why I did them a certain way:
- Provide a foldback mix to the performer with effects, whilst recording without effects
- Demonstrate compression for vocals
- Demonstrate monitoring of the recording
- Have no crosstalk between tracks
- Apply effects at mix down

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[1] Alive (Lyric Video) - Hillsong Young & Free - YouTube. 2014. Alive (Lyric Video) - Hillsong Young & Free - YouTube. [ONLINE] Available at: https://www.youtube.com/watch?v=qEvEVALLjNQ. [Accessed 01 December 2014].

[2] Hillsong Young & Free - "Alive" (Live at RELEVANT) - YouTube. 2014. Hillsong Young & Free - "Alive" (Live at RELEVANT) - YouTube. [ONLINE] Available at: https://www.youtube.com/watch?v=uwfAoydJ17M. [Accessed 01 December 2014].

Contents

Assets/Equipment

THE GROUP

Our group consisted of Me, Danny Dixon, Declan Taylor and Jaison Chako Mathew. Danny is skilled in performance and music, helping us compose the piece and making sure everything was in time and in key. My skills lie in live mixing which I transferred to multi-track mixing. I set most of the compressors, gates and EQ to improve the sound quality. Declan helped in all aspects of the production, especially collecting evidence for this report. Last but not least, Jaison's background is in radio meaning he knew how to set levels, patch and more. Together, we worked well as a team because we share skills in many fields.

INSTRUMENTS

We used a mix of electronic and recorded instruments including a vocal track. Below is a table of the instruments included in our piece.

Instrument	Musician	Type
Vocals	Danny Dixon Enya Smytheman	Vocals
Acoustic Guitar	Nathan Hill	Acoustic Instument
Acoustic Drum Kit	Phil Crest	Acoustic Instument
MIDI Keyboard	Nathan Hill	Electronic Instrument

Vocals
We used two vocalists in our piece, one male and one female. This mimics the video we were using as reference. We recorded Enya twice so that we had her singing the tune but also the Harmony. this would allow us to switch which she was singing.

Guitar
We recorded the Guitar using two different methods simultaneously. Nathan brought his electro-acoustic guitar which we routed through a DI box into Pro Tools. We also used the AKG microphone positioned in-front of the neck, just above the sound hole. This allowed us to capture a different sound, mainly the string noises. We then used a combination of the two to produce the final sound.

Drums
We used the Sennheiser drum mic kit from stores to capture the sound form the acoustic drum kit. We placed the microphones as follows:

Kick	Overhead 1	Overhead 2	Clip 1	Clip 2	Clip 3	Clip 4
Kick drum	Crash & Ride	Hi-Hat	Snare	Left Tom	Right Tom	Floor Tom

Keys

We used the M-Audio Keystation 61es which is a MIDI keyboard. This then controlled the Kontakt 5 > Berlin Concert Grand > Berlin Grand Piano with Overtones plugin in Pro Tools. We chose the keyboard to be our electronic instrument as we weren't keen on the electronic drum kits in Pro Tools or the Alesis SR-16 Digital Drum Machine available in stores. Electronically synthesised acoustic guitars general sound fake and naff. Also, people are generally used to listening to keyboards, not being able to tell the difference between a keyboard and a piano. We chose the Berlin Grand Piano after listening to several available plugins. We

Danny editing the MIDI

values on the keyboard track

all seemed to prefer that, especially Nathan. Having a MIDI keyboard allowed us to record the notes and change the piano sound afterwards if we wanted. It also enabled us to quantise the sound and change any duff notes without having to re-record the track for the entire length of the piece. It would also have been a lot of work to correctly mic up a piano, even if we could fit it in the lift!

MICROPHONES

Sennheiser Drum Mic Kit

To mic up the Drum Kit, we used the Sennheiser Evolution 600 Drum Microphone Kit[3]. I have tested this kit before for a live performance and it sounded absolutely phenomenal. It took a while listening to each mic individually to make sure they were positioned correctly. With the clip-on mics especially, we were getting a lot of the 'smack' from the stick rather than the 'boomf' of the drum. This is hard to

The Sennheiser e602 kick mic

EQ out as the frequencies are very close to each other, especially on the snare.
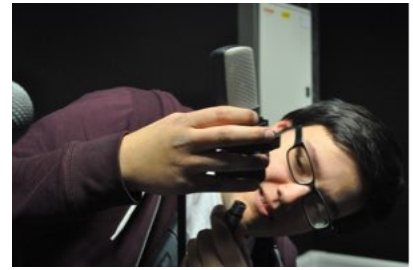
AKG C414B

We chose the AKG microphone because we could use it for lots of different applications, this meant less carrying and less wiring/patching. For vocals, we used it on

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[3] Sennheiser Drumkit 600 Drum Mic Kit E604 E602 E614. 2014. Sennheiser Drumkit 600 Drum Mic Kit E604 E602 E614. [ONLINE] Available at: http://www.uniquesquared.com/sennheiser-drumkit-600-drum-mic-kit-e604-e602-e614.html. [Accessed 12 December 2014].

it's cardioid polar pattern on a mic stand and a pop shield. For the guitar, we used it on a mic stand without the pop-shield. We could have used an SM58 above the singer angled down their throat, persuading them to "really open up his or her throat, which is useful when they have to hit some high notes."[4]   This also can reduce the amount of pops and sibilance as the microphone is not directly in front of the singer's mouth. However, an SM58 would not be suitable for recording a guitar. We decided in the end to go for a best-of-both-worlds scenario and pick a multi-purpose mic. We could have used the SM58 simultaneously however it would have been another channel to patch, compress and automate; a lot of work for negligible benefits.

Declan setting up the AKG microphone

ROOMS

We used the ME216/7 Studio and Control Room to record. To mix down, we used a combination of ME208, the larger project studio with the Artist Mix control surface, the smaller project studios, mostly for cleanup, and ME216 for final mastering.

ME216

This control room has lots of fantastic outboard equipment, a powerful Mac Pro and a large C24 Pro Tools control surface. We could use plugins to produce a lot of the effects that the outboard units do, however, they work in the digital realm. Modifying the signal before it gets converted means that any effects are happening to the original signal, not   a reconstituted waveform. For example, when we run the sound through the DBX compressor before it hits the A/D, it will be working constantly, not just at each sample. The difference may be negligible however David Franz suggests doing this rather than using a compressor as a channel insert to remove "some delay due to A/D/A/D conversion"[5].

Danny and I direction Phil from the control room

ME217

The recording studio is ok acoustically. It has partially padded walls and padded partitioning panels that you can position however you like. It does have the

Phil drumming in ME217

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[4] David Franz, 2003. Producing in the Home Studio with Pro Tools. 2 Edition. Berklee Press. Page 189.

[5] David Franz, 2003. Producing in the Home Studio with Pro Tools. 2 Edition. Berklee Press. Page 198.

disadvantage of having a metal microphone cabinet resonating in the corner, we tried to cover this with the panels to reduce the negative effects. The only real advantage over other recording rooms is the multicore into the control room.

OTHER EQUIPMENT

Headphones

We used AudioTechnica ATH-M50x headphones in the recording studio (ME217) as they have a near flat frequency response. They are also very well padded and hardly bleed at all.

Phil drumming and wearing the AudioTechnica Headphones

Monitoring Speakers

We used a combination of the KRK VTX8 and Genelec speakers. We mainly used the KRK's because they produced a nicer sounding kick drum sound. However, the Genelec speakers seemed to produce a more 'true' sound

Mic Stand

We used basic K&M microphone stands for the over-head microphones, kick drum mic microphones and the AKG.

Pop-Shield

We used an AKG pop-shield that came with the microphone. This helped protect the microphone from spit, some sibilance but mostly breath. The thin material removes a lot of the breathy sounds from that recoding that would be hard to fix in the mix-down stage.

The KRK VTX8, beautiful!

DI Box

We used a generic DI box from stores to take the input from the guitar into Pro Tools. We didn't go for anything for fancy because, in my experience, there's not many ways to ruin a DI box. The ones from stores are not have a hum problem, they are not particularly hissy and they can be phantom powered.

XLR

We used generic no-broken XLR cables. We had an assortment of lengths and used them to connect the various microphones and other equipment to Pro Tools.
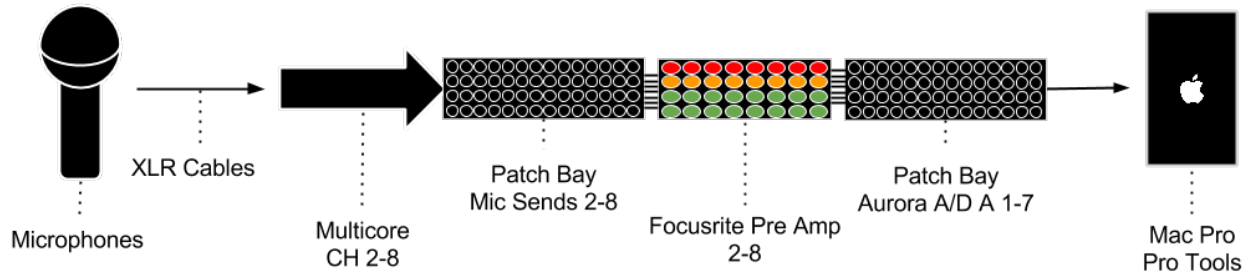
Recording

The session for recording can be found in the folder 'Alive REC'.

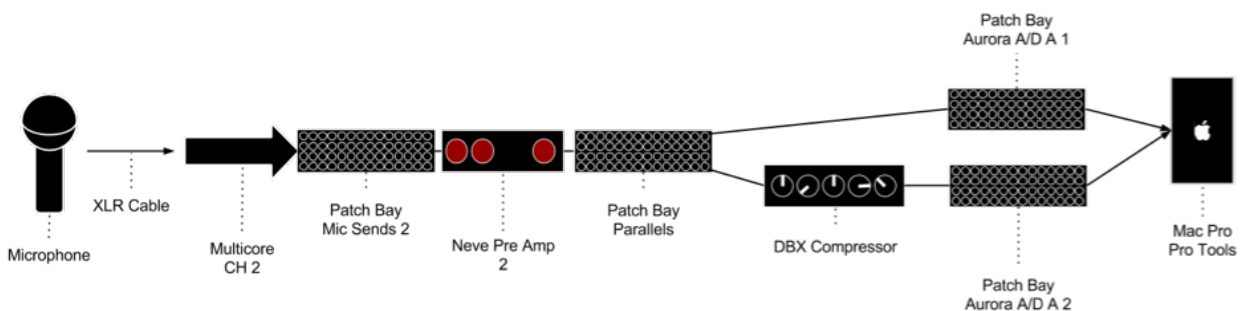## PATCHING

Drum Microphones

We connected the microphones to the multicore using XLR cables. Using this patch box before, we have had trouble with input 1 (everybody will use this one, wear and tear is bound to happen) so we started from 2 and plugged them in one by one. We then patched them into the Focusrite pre amp, again starting from 2 because of the same issue. We chose the Focusrite pre amp over the C24 because it is a dedicated pre amp rather than that being a side-function. It also has LED's on indicating the level, this allows us to check levels

The Focusrite Pre Amp

straight out of the instrument, rather than after possibly being boosted, cut or even clipped by other units and then checking in Pro Tools. Another benefit of using this pre amp is that it has 8 channels. This means that the controls are the same across all channels, this helps make sure we set all the channels correctly. We then patched into Pro Tools 1-7, we have not had any problems with channel 1 on the Analogue to Digital Converter. We then chose the appropriate inputs for the relative channels in Pro Tools.
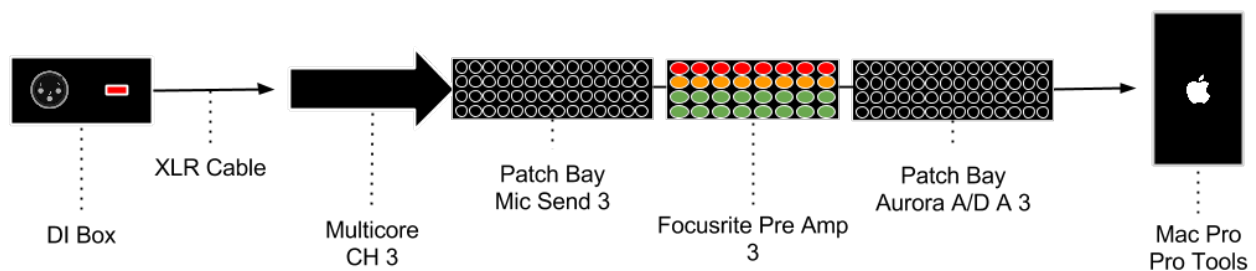
Microphone

We connected the AKG microphone using an XLR cable to channel 2 on the patch box. Instead of then patching this through the Focusrite pre amp, we decided to use the Neve. AMS Neve is renowned for fantastic sounding pre amps and the reviews6 for this unit say that it is fantastic for vocals. We then split the signal in the parallels. One signal path then went straight to the A/D

The DBX compressor units

whilst the other went through a DBX 266 XL Compressor/Gate unit then into the A/D and on into Pro-Tools. The assignment brief asks for "compression for vocals"[7] however we wanted to record without compression as well. This setup allowed us to have two tracks that were exactly the same except that one is compressed and one is clean. We used the same paths for different tracks and different vocalists. We had the same two inputs assigned to several tracks, however we only armed the ones we wished to record to so we did not overwrite anything. We did not use the compressed signal path for recording the Guitar with the AKG, we only assigned the uncompressed path to a channel.

Guitar DI

Nathan plugged his guitar into the DI box using a 1/4" Jack to Jack lead. The DI box was then patched to the Focusrite pre-amp. We put the signal through a pre-amp to give us the ability to fine-tune the signal gain. We then patched into Pro Tools.
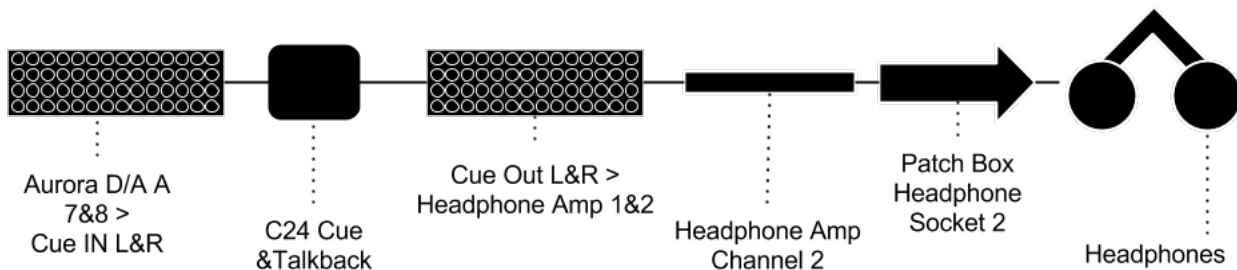
Headphones Mix

In Pro Tools, we has multiple holdback mixes. For the clean mixes, we came out of channels 7&8 and routed through the C24's cue function. This allowed us to control the mix/talkback ratio using the dials on the desk. We then patched this into the 1&2 inputs

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[6] Neve 1073 DPA - User review - Gearslutz.com. 2014. Neve 1073 DPA - User review - Gearslutz.com. [ONLINE] Available at: https://www.gearslutz.com/board/reviews/674250-neve-1073-dpa.html. [Accessed 09 December 2014].

[7] Ingham, J, 2014. *MODULE ASSIGNMENT SPECIFICATION - Multi-track Recording and Mixing*. 5. School of Journalism & Media: University of Central Lancashire. Page 3.

on the headphone amp. On the second channel on the Headphone Amp, I then made sure that the '1' and '2' buttons were pressed, 'Mono' was not pressed and the 'direct' button was also not pressed. The reason we used channel 2 is that we had used 1 before and found that it was quite hissy. Channel two was slightly better although we did still have some issues.

Aurora D/A A 7&8 > Cue IN L&R   C24 Cue &Talkback   Cue Out L&R > Headphone Amp 1&2   Headphone Amp Channel 2   Patch Box Headphone Socket 2   Headphones

For the mix with effects, we sent out of B1&2 (9&10) into the effects unit. From the effects unit we then went into the Headphone Amp.

FOLDBACK/HEADPHONES MIXES

We provided a fold back mix for all our performers. We had three fold back mixes, one for the drummer, one for the guitarist and one for the vocalists. All were used at different times so we could use the same set of headphones without having to unplug them and change the channel. The fold back mix for the vocalists had effects applied to it. The fold back mixes are outlined below.

Drummer Mix
For the drummer, we just used the reference track and his own drums. We sent these directly to 7&8 out, not using a bus. We mixed these pre-fade for the drummer.

Guitar Mix
For the mix for the guitarist, we sent the necessary tracks to bus 3 pre fade, we then used that bus as the input for an aux track. We then sent that to 7&8 out.

Vocal Mix
For the vocal mix, we sent the necessary tracks to bus 5 pre fade, then used that as input for an aux track. We then sent that to B1&2 out which was patched to the MX300 effects unit which was then patched to the headphone amp. The effects unit was set to preset 10, "Vocality".

RECORDING

Setting Levels

We were quite sneaky setting the levels for the recordings. Form our experience, we know that when setting levels, musicians do not play/sing nearly as loud as they do when they are actually recording. They get caught up in the moment and put more effort in when they feel the pressure of being recorded. We told the musicians that we were recording straight away and set the levels whilst they ran through the song. This allowed us to set the levels right the first time without them clipping during the actual recording. This worked best with Phil as he played much louder on some takes than others. However, I learned this trick form Nathan so he didn't fall for it.

Jaison setting the levels on the pre-amp whilst Phil was playing

Pro Tools Play-listing

We used the play-listing function in Pro Tools to record multiple takes of the same track. This meant that we did not have multiple tracks all with similar audio on. It allowed us to choose the best parts from all takes and put them together onto one final instrument track. We could then use the track in our mix down without having to mix between takes of the same instrument.

Me adding new takes to the drum tracks

Monitoring of the Recording

In the studio we monitored using the KRK speakers ('Alt Mon' on the C24). This is because we prefer the sound they produce. However, when automating and EQing, we did occasionally have a listen through the Genelec Speakers to see if the sound was better over all or just on the KRK's.

Post-Recording

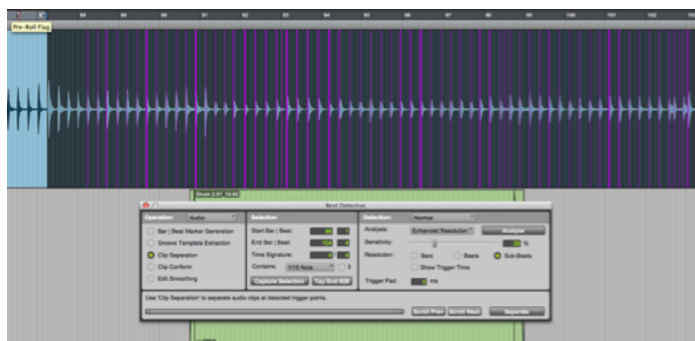The session for recording can be found in the folder 'Alive MIX'.

CLEANUP

We recorded all instruments separately meaning there was no crosstalk between tracks, however, having several microphones on the drum kit meant that you could very slightly hear drums in different microphones. To reduce these effects, I will outline below how we cleaned up each track and why.

Drums

The drums were the hardest instrument to cleanup. First, we solo'd each track individually and listened for where the specific drum was and was not playing. We then removed any sections where was not playing and faded the clips in and out. This reduced the amount of spill between microphones. Once we had done this, we gated the drums to make them more punchy and to remove other drums on the half beat. For example, the beat went "Kick, Snare, Kick, Snare". On the Kick microphone, you could hear the snare on the half beat; we set the threshold of the gate so it cut this out.

There was also a small section of the song where the drummer lost the beat temporality, or as Martin Walker puts it: Sloppy Timing[8]. You can find this by looking for the 'Quantize' marker. At first, we tried using the Beat Detective tool in Pro Tools to find the beats, separate the track and automatically quantise the kick drum. However, this did not work very well as it put in far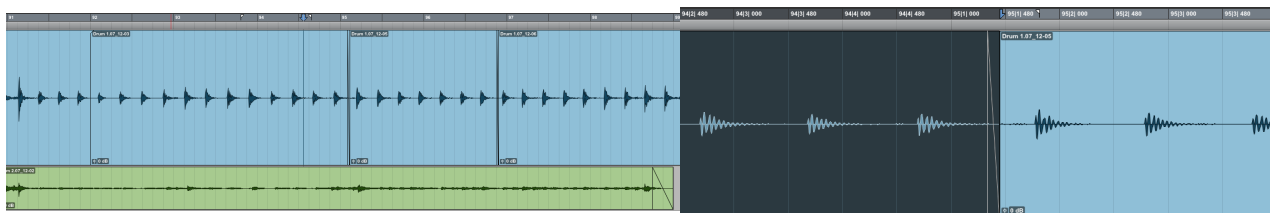 too many splits for us to handle, it became very confusing. Also, since we used a reference track rather than a click track, the grid in Pro Tools did not match the rhythm of the song, meaning we could not automatically quantise to it. Instead, we slowly scrubbed through the track in the 'bad' area to listen for the beat where Phil lost time. When we found it, we added a split. We carried on to find out when got back into time. We found out that he actually changes time twice meaning we had to put in three splits. We then manually moved clips so they aligned with the beat. Once they sounded right, we added in cross fades to remove some small pops.

Using the Beat Detective tool on the Kick Drum track to try and quantise it

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[8] Basics Of Quantising. 2014. Basics Of Quantising. [ONLINE] Available at: http://www.soundonsound.com/sos/mar99/articles/Quant.html. [Accessed 11 December 2014].

We also added EQ to the drums. The plan was to EQ out the other drums[9] from the tracks, however, some of the drums share frequencies, making it very hard to do this. It is also hard to EQ frequencies out of a drum without losing a human feel. At one point, we had EQ'd too harshly and our lovely acoustic drum kit sounded like an electronic drum machine.

The final product of our quantising efforts   *The short crossfades between clips*
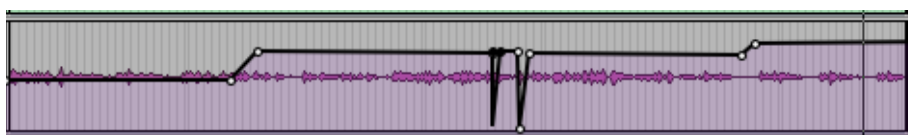
We also had to compress some of the tracks, especially symbols. We needed to reduce the dynamic range so fitted in with the rest of the instruments.

Keys

Because the keyboard was MIDI rather than recorded, it allowed us to quantise the notes afterwards. Some were just slightly off beat, to counteract this we just opened up the MIDI editor and dragged the note to the correct place. Nathan also added some flair, known as glissando, to his chords. This worked most of the time however sometimes it was unsuitable. We were able to just move the starts of the notes too, they all aligned. We wee also able to change the velocity which we did on occasion. This allowed us to 'compress' the keyboard. Using MIDI also allowed us to remove some stray or extra notes. We could easily remove or change them.

Guitar

The sound of the lead guitar was very clean and sounded quite nice. On the style guitar however, we did

We used volume automation to remove the string noises.

have to remove some string noises from the mic track. We were expecting to hear this throughout the track however when we listened back, there was hardly any. These two small blips seemed out of place so we decided to remove them. To do this, we used the Pen tool to create three points in the volume track around the blip. We then pulled the middle one down to the bottom to effectively mute that section. An alternate method would have been highlighting the blip, separating and deleting it then crossfading the star and ends of the clips. However, it would have take more time to do it this way. Also, the fades would not be quick enough as they snap to the grid. One disadvantage

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[9] Kick-drum Processing Tips. 2014. Kick-drum Processing Tips. [ONLINE] Available at: http://www.soundonsound.com/sos/nov03/articles/logicnotes.htm. [Accessed 10 December 2014].

of doing it our way, though, is that if we write new automation to the track, we lose this and have to do it again.

Vocals

When cleaning up the vocals removed any sections where the vocalist was not singing. If we have removed the sections you be able to hear spill from the headphones that the vocals were listening to.

Markers

We used markers to signal between group members, to make notes and to remember specific points in the track.

MIXING

To mix the final song, we slowly layered the instruments. It is very difficult to focus on more than one thing at once, so instead of trying to just mix the final thing all at once[10], we mixed each Bus individually first and then automated the busses against each other.

Drums

Late on in mixing we decided to mute the floor Tom. One of the reasons we did this with is because it was out of tune, this made it sound muddy in the mix. We put lots of EQ onto each of the drums to maximise the good sounds and reduce the bad ones. We also did lots of dynamics processing, this helped us control the drums in a similar way to changing the velocity in MIDI.

Keys

The keyboard didn't have much dynamic range compared to some of the other instruments, in fact we had to add in some dynamics manually by automating the volume at certain parts of the track.

Guitar

To make the track build over time, we recorded a section of guitar which added 'style' or 'flair' to the piece. We brought this in at the end and had it compete with the lead guitar. We also added an amp effect onto this guitar giving it a more familiar feel.

Vocals

We put all the vocals into a bus because the compressor units made them loose their dynamics near the end of the song, this meant the instruments were dominating. To increase the volume of the vocals in proportion, we could now just increase the volume of the bus.

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[10] The Music Mixing Process Part 1. 2014. The Music Mixing Process Part 1. [ONLINE] Available at: http://www.music-production-guide.com/music-mixing.html. [Accessed 11 December 2014].

Put vocals to vocal bus 3 because compressor made vocals lose dynamics near end of song when other instruments increased, needed to bring all vocals up in proportion. We put Danny's vocals through the Neve EQ unit. This gave it a fantastic sound. We used the Neve rather than the plugins in pro tools because these units are designed to to make your sound especially good. We also added a small amount of reverb to make the vocals sound fuller.

The Neve 8803 Dual EQ unit

Automation

We used automation heavily in our piece. We sent each of the instruments to their own bus, for example each drum went to the drum bus, guitars went to the guitar bus and all vocals went to a vocal bus. Doing this helped us to automate all of the vocals, guitar and drums in proportion after we had manually automated the individual tracks. Some automation we did using the C24 control surface, some we did manually using the Pen tool. We mainly used this for small dips or quick fades.

Effects

Our main effects were EQ and dynamics processing however we did use some of the effects. We used a light reverb vocals to fill them out. We also used an amp on the flair guitar channel.

Panning

We used light panning in our piece. This livened up the in and made it a bit more entertaining, especially when wearing headphones. The main panning effect is right at the end on the drum shaker.

MASTERING

The session for mastering can be found in the folder 'Alive MASTER'. The final bounced master can be found inside this folder too.

Printout

When we had finished mixing, we bounced a printout to the mix session, we then imported this into a new pro tools session to master. Our printout was bounced as a an 16 bit stereo interleaved WAV file.

Maxim

We used maxim to master, we started with with the 'Cd mastering (16 bit)' preset, added Dither with noise shaping and set a 2db ceiling. We then bounced this final master.

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