Chapter 25. Meeting 25, Formats and Distribution

25.1. Announcements

- Mix Report 2 due Wednesday 16 May (no extensions!)
- We might listen to mixes if available before class
- Track Sheet Logs: show me after class today
- Subject evaluations!

25.2. Reading: Millard: Tape Recording and Music Making

- What form of recording did the earliest electromagnetic recorders replace?
- For what applications did musicians use portable magnetic recorders? What does this suggest about the kinds of music these musicians were interested in?
- Other than duration, what were some other advantages of recording on tape?
- What were some features that led to the success of the Philips compact cassette?
- Why does the author suggest that “rap ... could only have begun on cassette tape”? ”
- In what ways did the cassette affect the development of world music?
- Has digital technology, like tape, changed the “corporate nexus of independent companies and media conglomerates” in the music industry?

25.3. Ordering Mastering Processors

- Exciters should be early in signal path
- EQ might come before or after compression (prefer before with multiband compression)
- A final limiter is often (nearly always) the penultimate processor
- Dither is always last
25.4. Sample Setups

- Sample minimal: filter, limiter, dither
- Sample maximal: manual fading, exciter, filter, multi-band compressor, limiter, dither

25.5. Mastering Dynamics: Limiting

- Increase loudness with little change to mix
- Remove “unnecessary” transients or spikes
- Will not drastically change relationship between instruments in the mix
- Limiting should be fast and shallow (low threshold around -3 to -6 dBFS); some processors set input level into a fixed (0 dB) threshold
- Output ceiling should be set no higher than -0.2 dBFS
- May create flattened, distorted, and lifeless sound
- Example: Sonnox Oxford Limiter
- Example: Logic Limiter
- Example: Live Compressor as Mastering Limiter
25.6. Mastering Dynamics: Compression

- Increases loudness
- Favor ratios less than 3:1
- Favor long attacks (over 14 ms) and short releases
- Most transparent compression with small ratio (1.01 to 1.1:1) and deep threshold (-30 to -40 dBFS)
- Preserve transients: long (high) attack; Avoid noticeable release times
- May drastically change relationship between instruments in the mix
- May add punch and strength, make tracks gel
- Activity in some frequency ranges may have negative side effects for other frequency ranges
- May create flattened, distorted, and lifeless sound
- Example: Sonnox: Oxford Dynamics
• Example: Logic Compressor

• Example: Live Compressor as Mastering Compressor

25.7. Mastering Dynamics: Multiband Processors

• Benefits: each band is independently optimized

  Example: a peak in the vocal line will not turn down the bass

  Example: high frequency overtones and transients remain while mid-range dynamics are controlled

• Detriments: alters balance of mix, alters phase, may phase distort at crossover transitions

• “The multiband device’s virtues permit louder average levels than were previously achievable -- making it the most powerful but also potentially the most deadly audio process that’s ever been invented.” (Katz 2007, p. 128)

• Use as few bands as necessary, from 2 to 5
• Tune bands to the particular material
• Can aim for comparable gain reduction in each band
  Can aim for gain reduction only in specific bands
• Favor slow attacks, low ratios, and deep thresholds
• Favor slow attacks, low ratios, and deep thresholds
• Example: Apple Multiband Compressor
• Example: Izotope Ozone 5 Dynamics

25.8. Mastering Filters
• Goal of achieving tonal balance
• Adjustments have secondary / complimentary effects
• Less is more: +/- 3 dB may be sufficient
• Adjustments alter internal balance of mix
• Adjustments should be listened to for long durations and with A/B comparisons

25.9. Mastering Filters: Common Applications
• Focusing middle range: using a parametric to boost or cut
• Controlling bass: boosting between 80 and 120 Hz while reducing below 60 Hz
• Sparklies or air band boost: initially seductive but can cause long term fatigue
• DC Offset removal: HPF at 20 Hz
• Filters may have a sound independent of filter settings
• Example: Logic Fat EQ
• Example: Sonnox Oxford Equaliser & Filters

25.10. Mastering Exciters
• Generate favorable distortion
• Add harmonics: different processors add different combinations of harmonics
• May lead to unmusical or excessively bright or edgy results
• May add warmth and presence to dry and cold mixes
• May model tube or analog processing or saturation
• Example: Logic Exciter
• Example: Sonnox Oxford Dynamics
• Example: Izotope Ozone 5 Exciter

25.11. Mastering Maximizers
• Psychoacoustic or other perceptual techniques
• Specialized limiting
• Example: Sonnox Inflator
• Example: Izotope Ozone 5 Maximizer

25.12. The Complete Processing Chain
• As little as necessary from each processor
• As few processors as possible
• Example: Dirt Feelin
• Example: Katherine Young’s Pretty Monsters: Feldspar