Analysis of Peer Reviews in Music Production

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Audio engineering vs. literally anything else

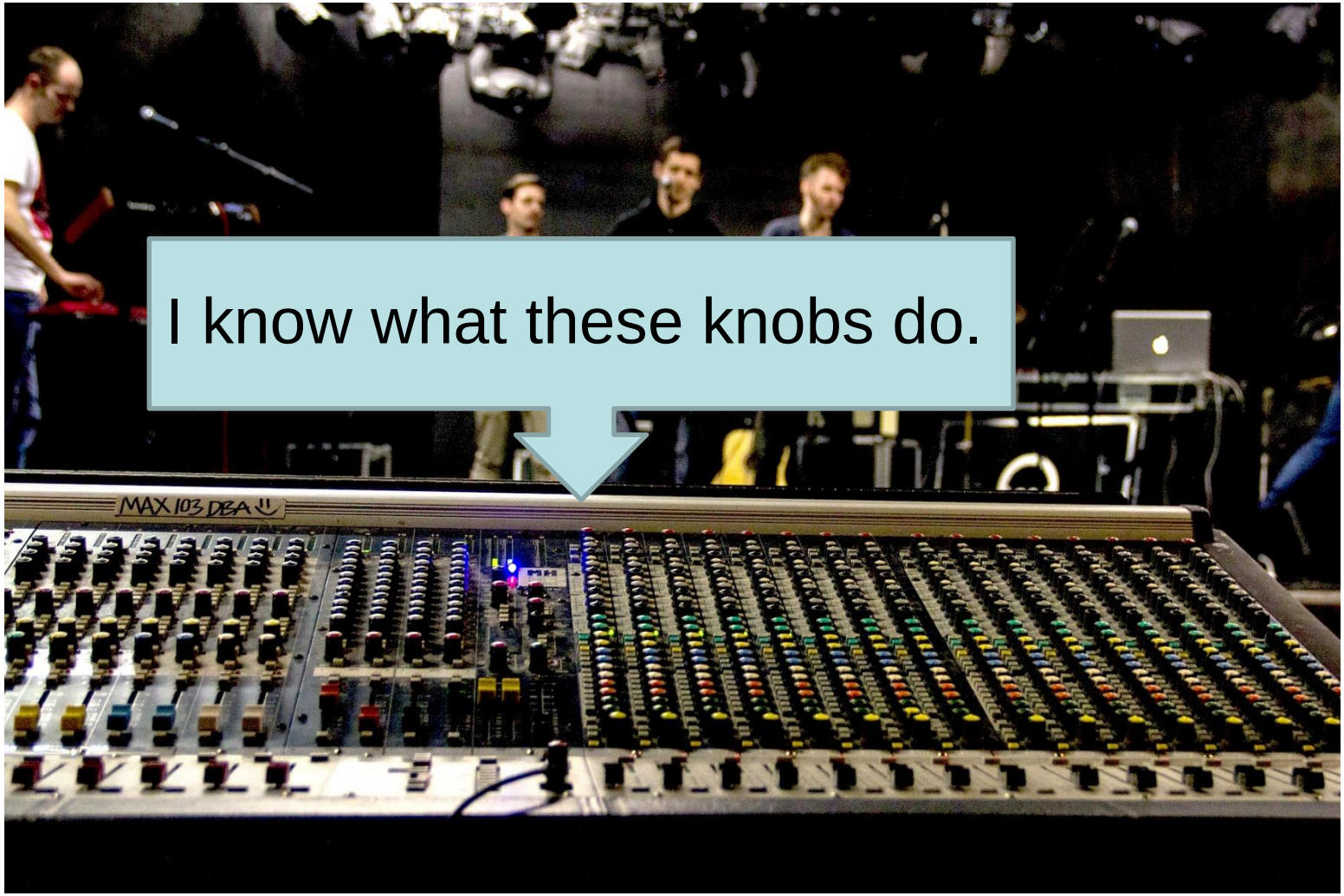
ENGINEERING

- Precise
- Low distortion
- Digital
- No defects
- Clean
- Transparent

AUDIO ENGINEERING

- Imperfections
- Saturation, distortion, overdrive
- Analogue
- Defects
- Coloration
- Did I mention imperfections?

Audio engineering



Mixing

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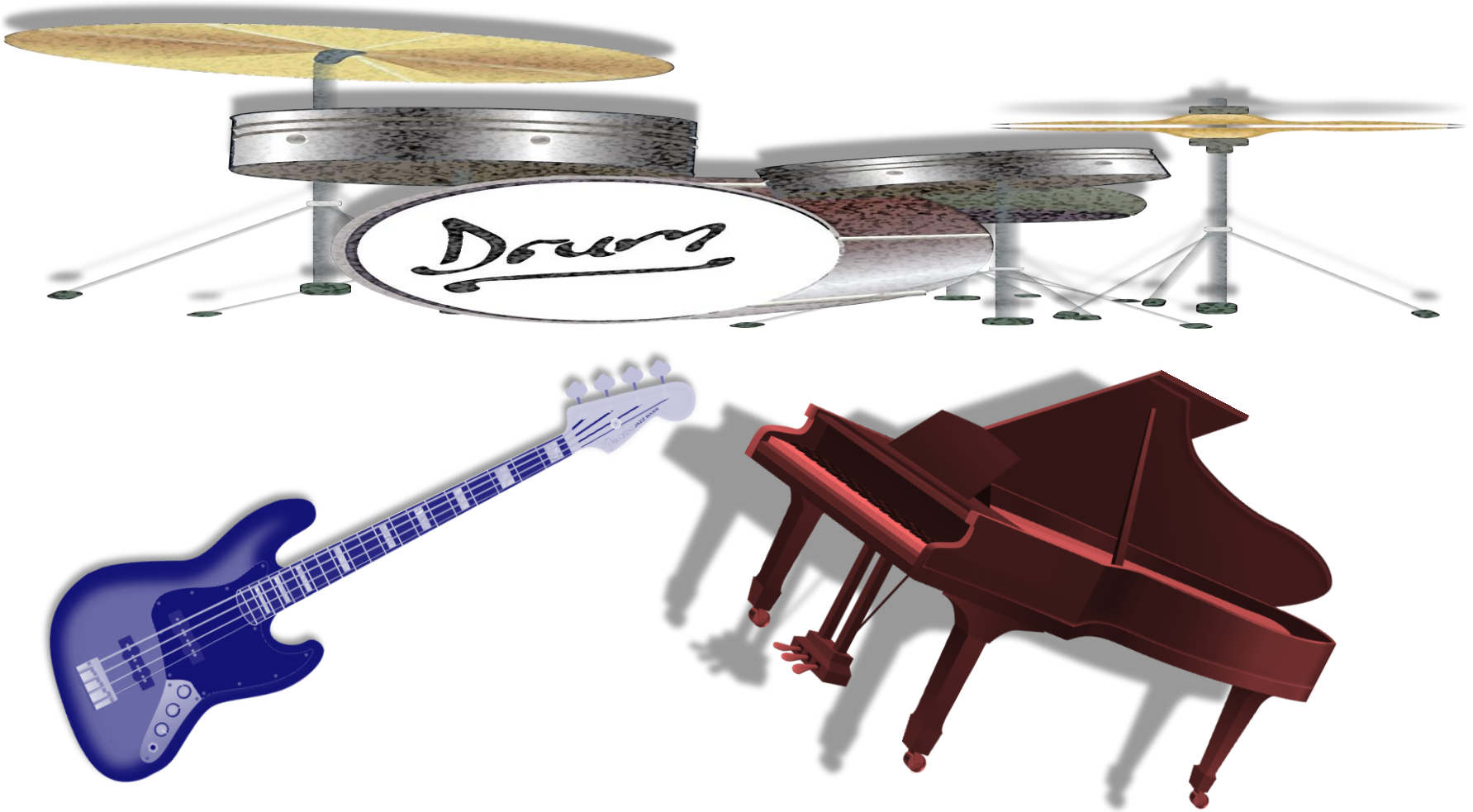

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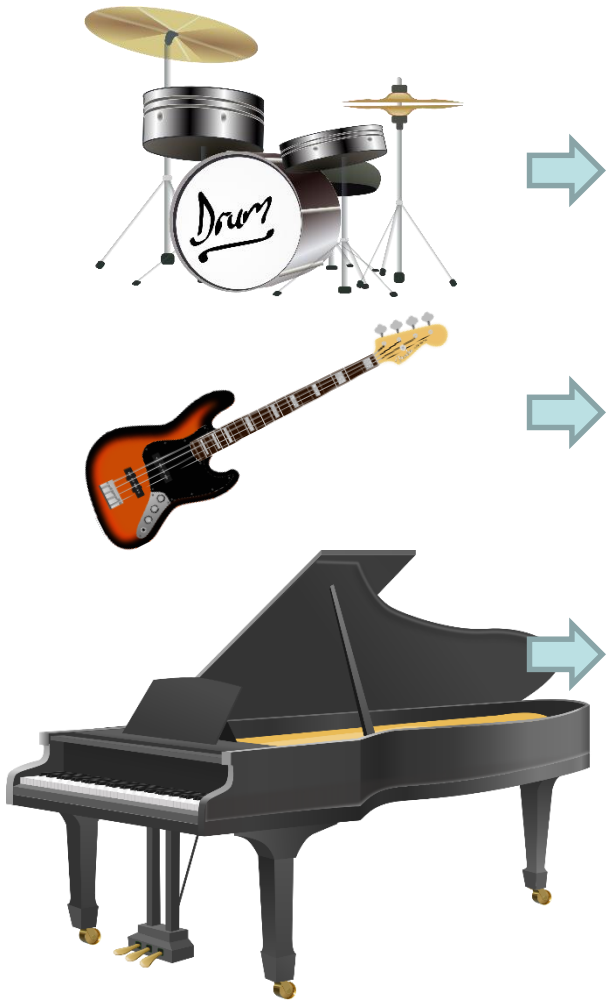
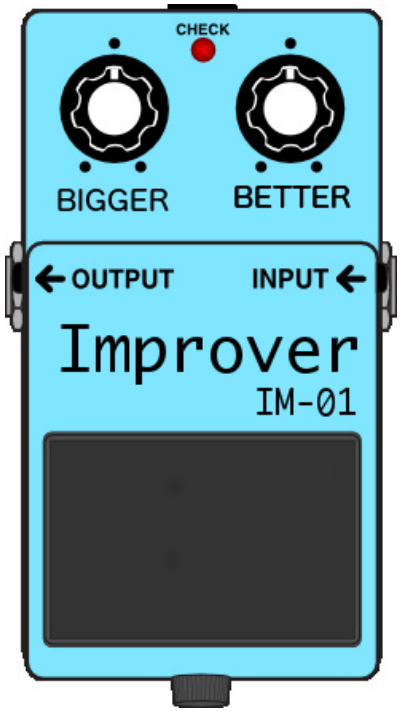
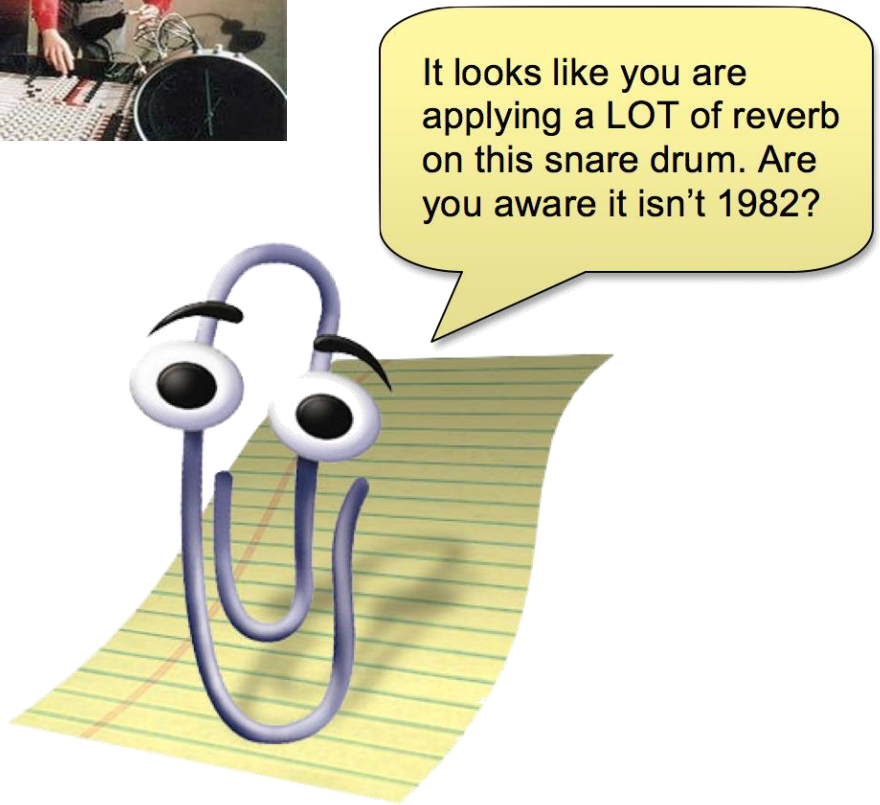


Balance
Panning
Equalisation
Compression
Reverberation
Echoes
Excitation
Distortion
…

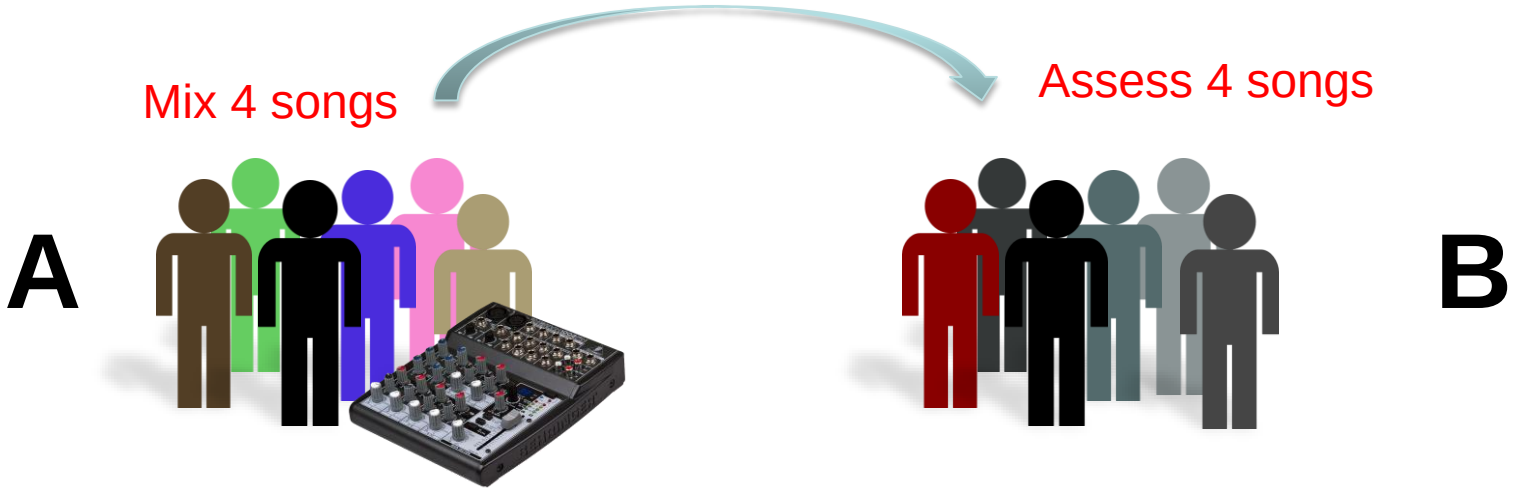
1965 vs now

Background


CHECK
BIGGER
BETTER
OUTPUT
INPUT
Improver
IM-01


It looks like you are applying a LOT of reverb on this snare drum. Are you aware it isn't 1982?

Experiment setup



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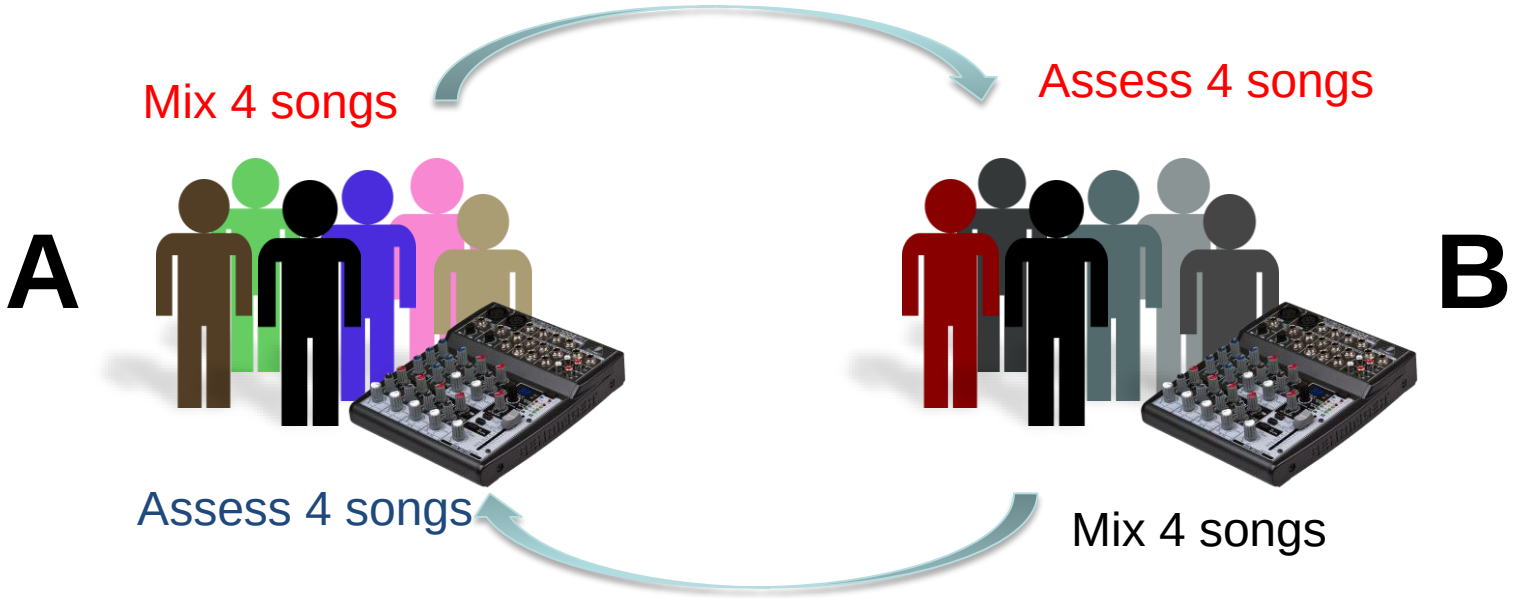

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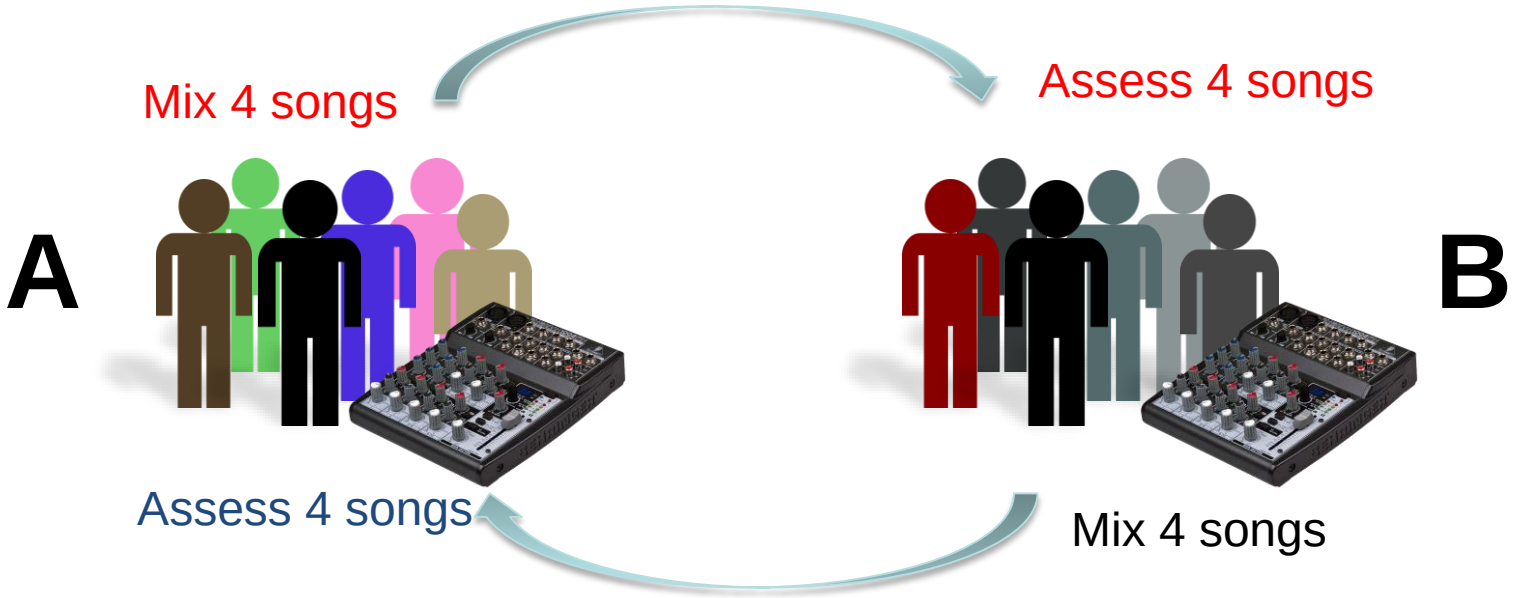
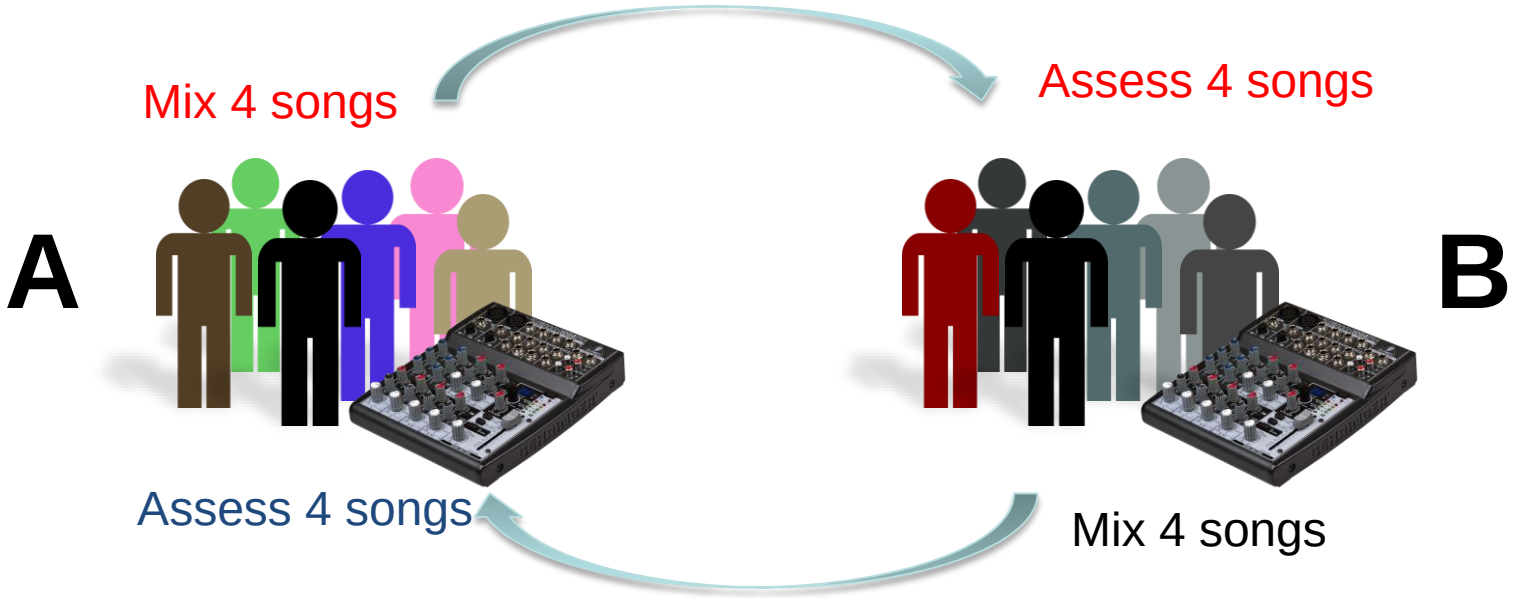


8 students and 1 professional assess 4 songs mixed by 8 other students and 1 other professional

… and vice versa

Experiment setup



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McGill
Schulich School of Music
École de musique Schulich
CIRMMT

CIS centre for intelligent sensing

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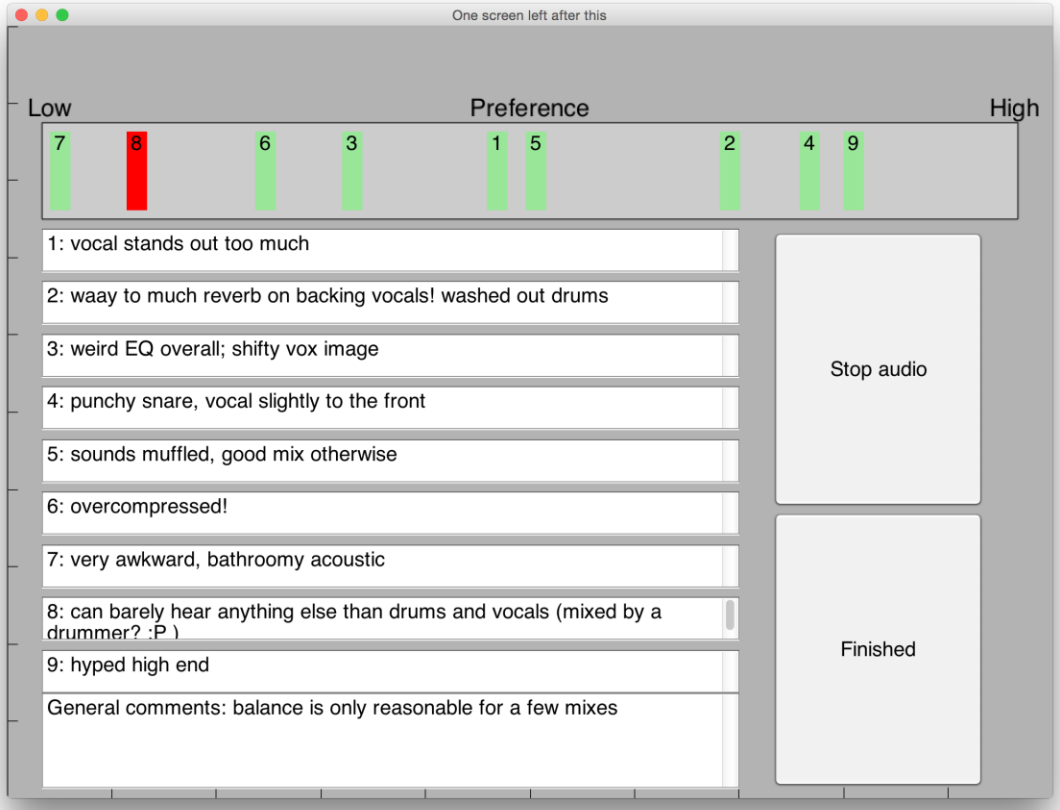
Perceptual evaluation



B. De Man and J.D. Reiss, "*APE: Audio Perceptual Evaluation toolbox for MATLAB*," 136th Convention of the Audio Engineering Society, 2014.

Example

- **Mix A**
- **Mix B**

Example

- **Mix A**

this sounds good. all the parts shine through and have their own place in mix; tasty reverb.

cymbals could be brighter and closer; tubby bass; accordian is as important as vocal? nuh uh

Wide panning. Can hear Rhodes very well. clear vocals. big bass. Big space. strumming guitar apparent.

Depth in the vocal, clear drum sound in the center, overall balance and image are good.

Bass a bit too heavy and muddy. Nice balance, otherwise.

Best balance. Nice low end. All instruments present. Great vocal sound. Nice verb choice and placed well with the boack up vox. My favourite by far.

Vocals might need a little more presence

cant hear kick. a bit bass heavy

…

- **Mix B**

less snaps and accordion

Drums way too set back. weird reverb. Vocals / snaps way too forward comparatively. NO KICK DRUM?

vocal stands out in the mix and instruments are far behind the vocal in the mix

Too much reverb: distracting; Good level and placement on vocal, though too harsh; Lack of stereo width; ensemble (minus vocal) competes for same space; phasey and swimmy; no low end

Most reverb on the vocals thus far, but I like it. Drums too roomy though, and buried. Can't hear the keys at all.

vocal is double? phasing issues; Vocals too loud

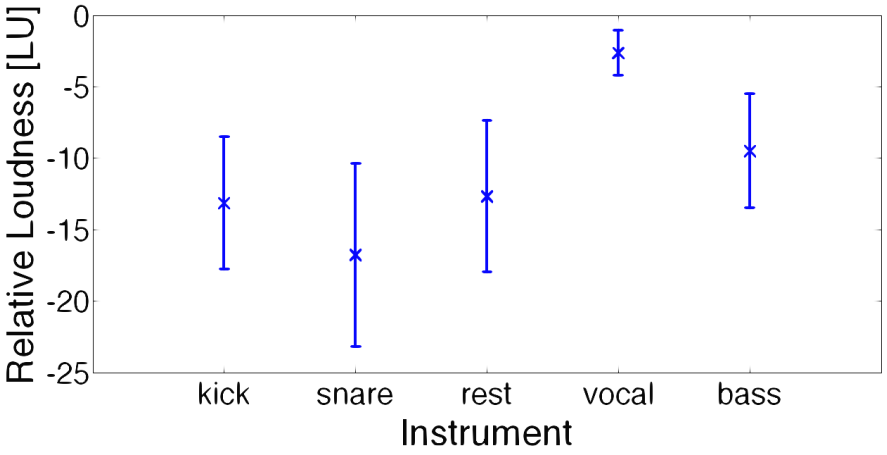
no bass or kick. not sure about the reverb on the accordeon.

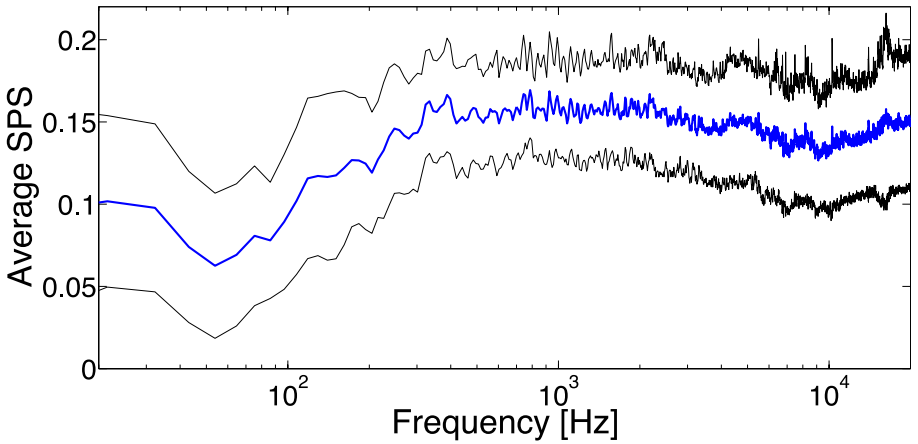
too much compression

…

Previous analysis

- Analysis of extracted audio features from tracks and complete mix
- Comparison across engineers, songs and instruments





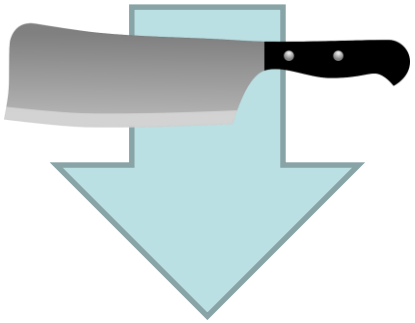
B. De Man, B. Leonard, R. King and J.D. Reiss, "*An Analysis and Evaluation of Audio Features for Multitrack Music Mixtures*," 15th International Society for Music Information Retrieval Conference, 2014.

Now

"Drums a little distant. Vox a little hot. Lower midrange feels a little hollow, otherwise pretty good."

Now

“Drums a little distant. Vox a little hot. Lower midrange feels a little hollow, otherwise pretty good.”



“Drums a little distant.”
“Vox a little hot.”
“Lower midrange feels a little hollow,”
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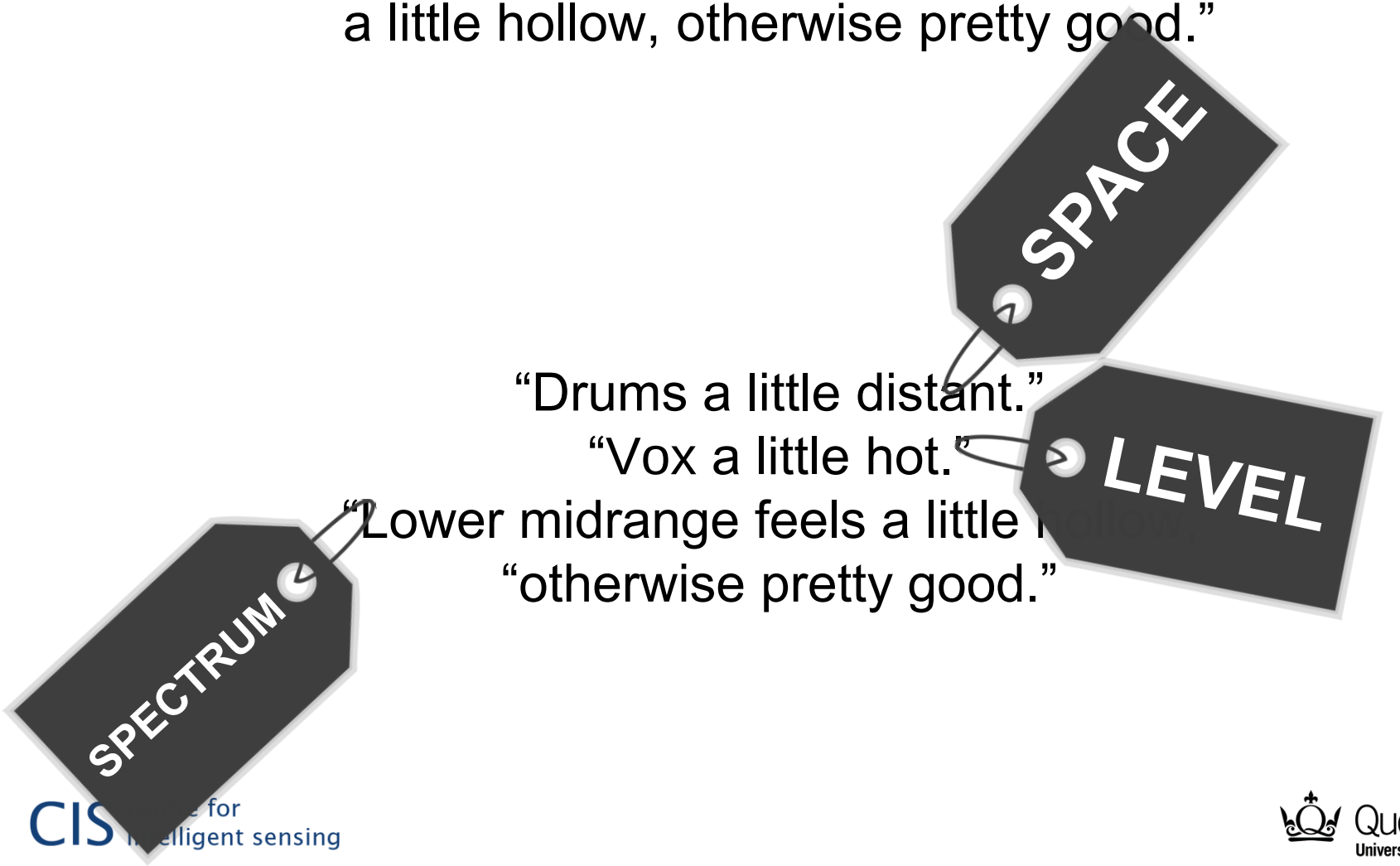

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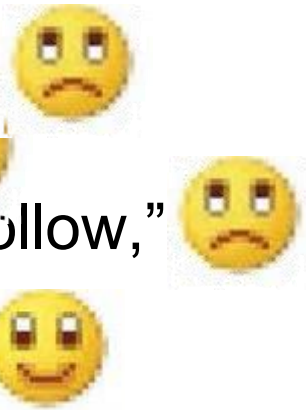

Now

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x 1397

“Drums a little distant.”
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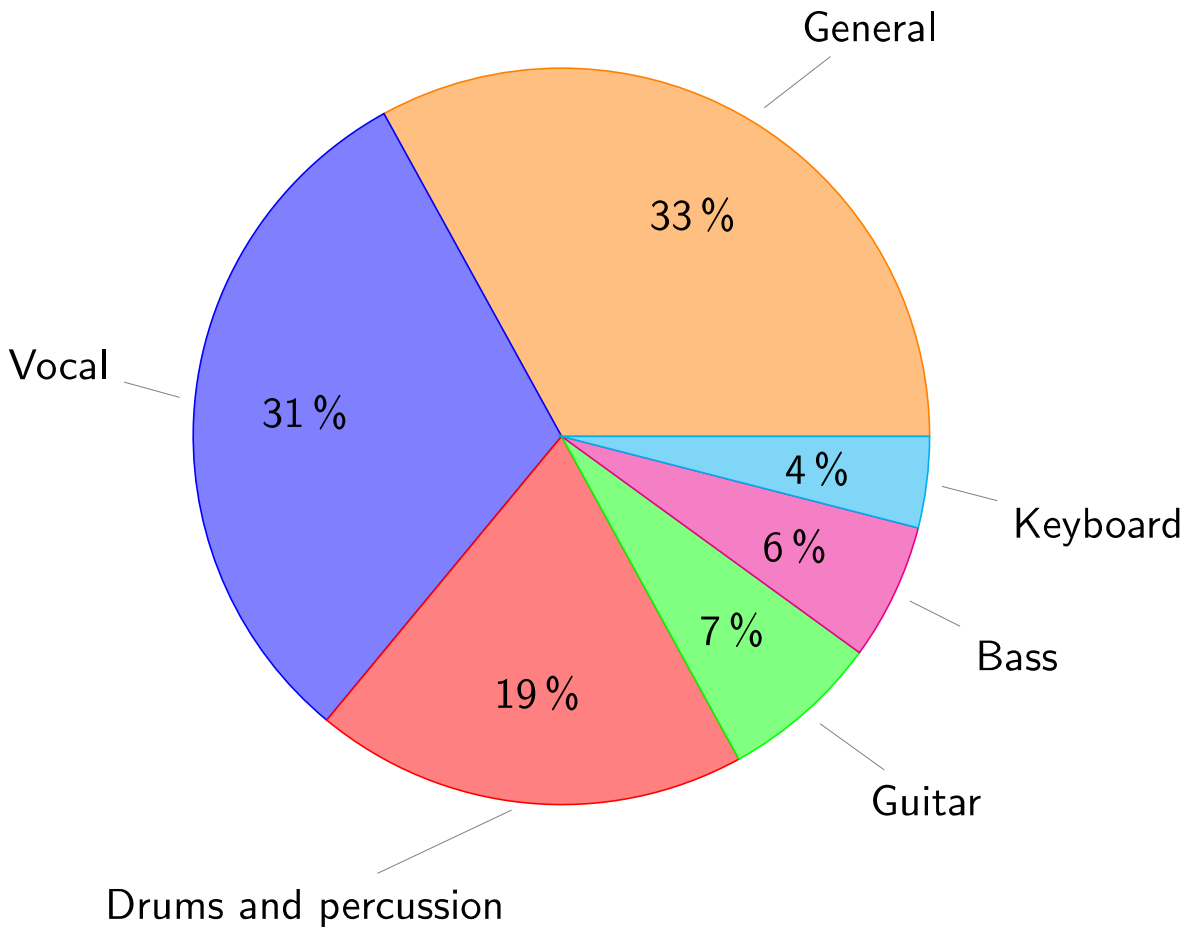
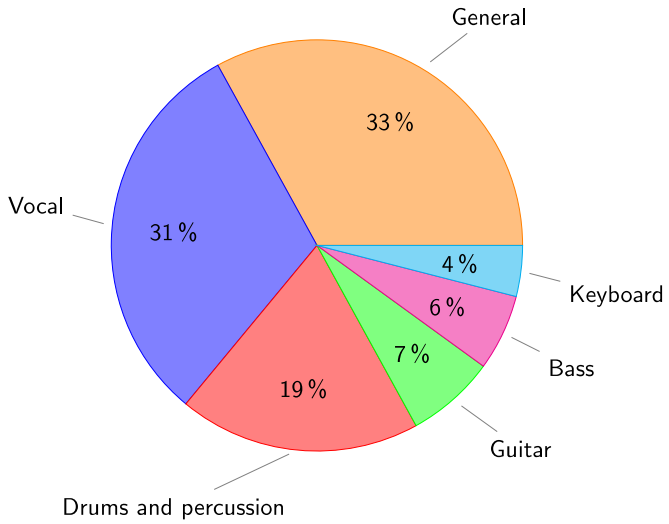
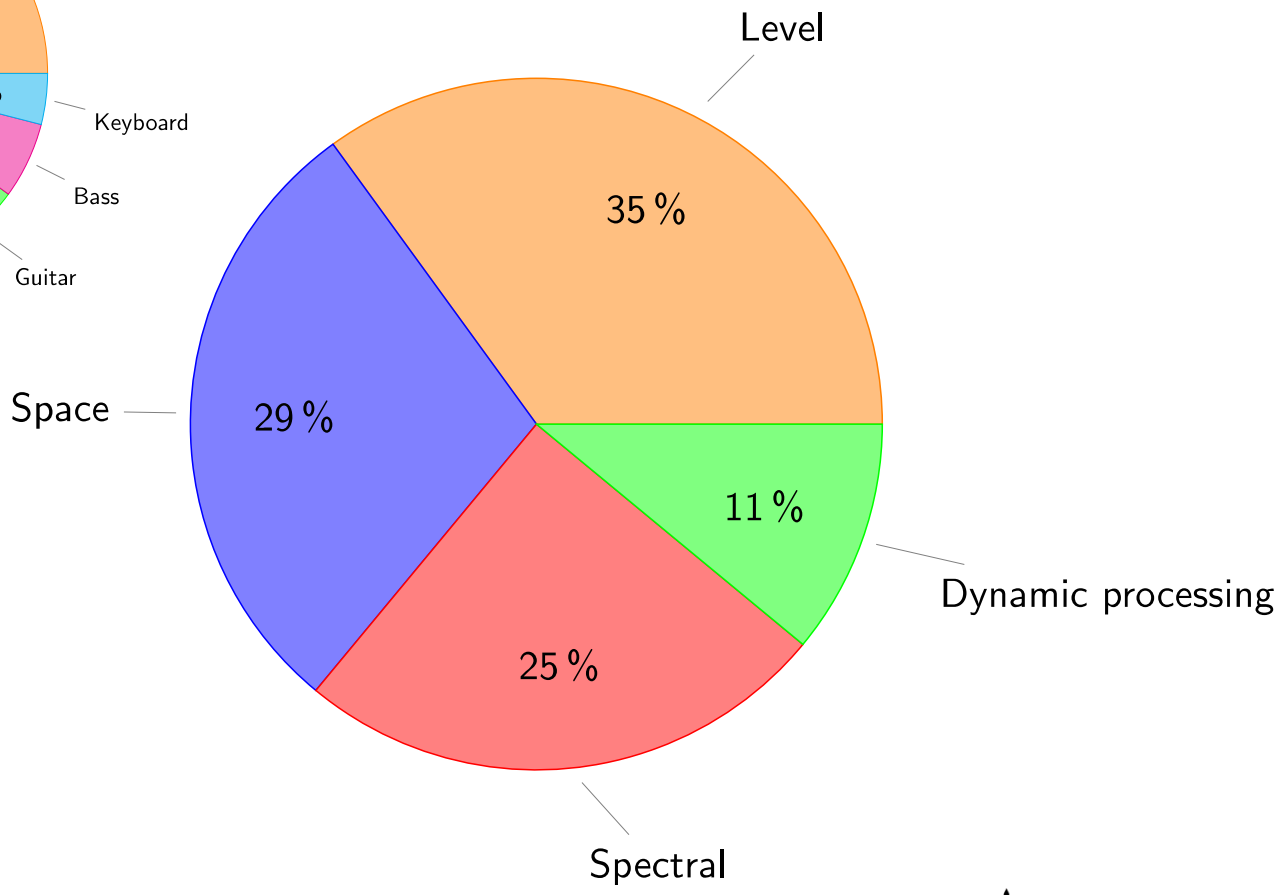
(3633 statements)

Quantitative analysis



Quantitative analysis





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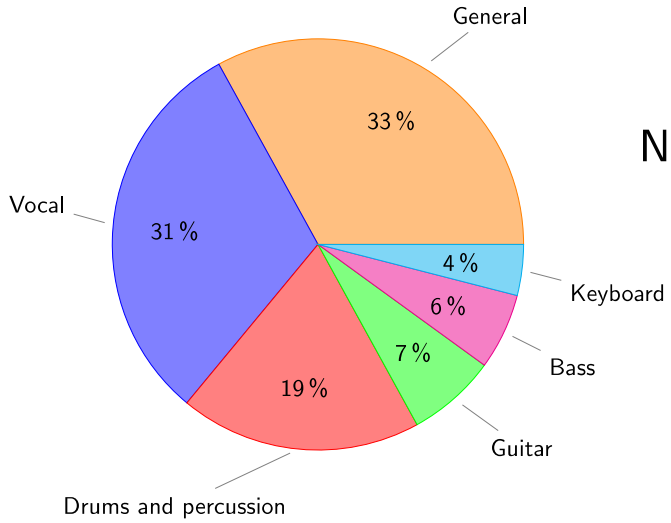
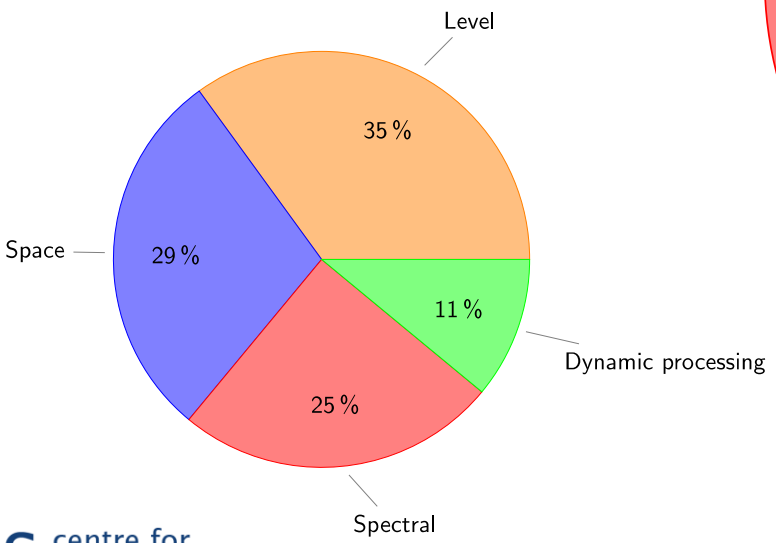
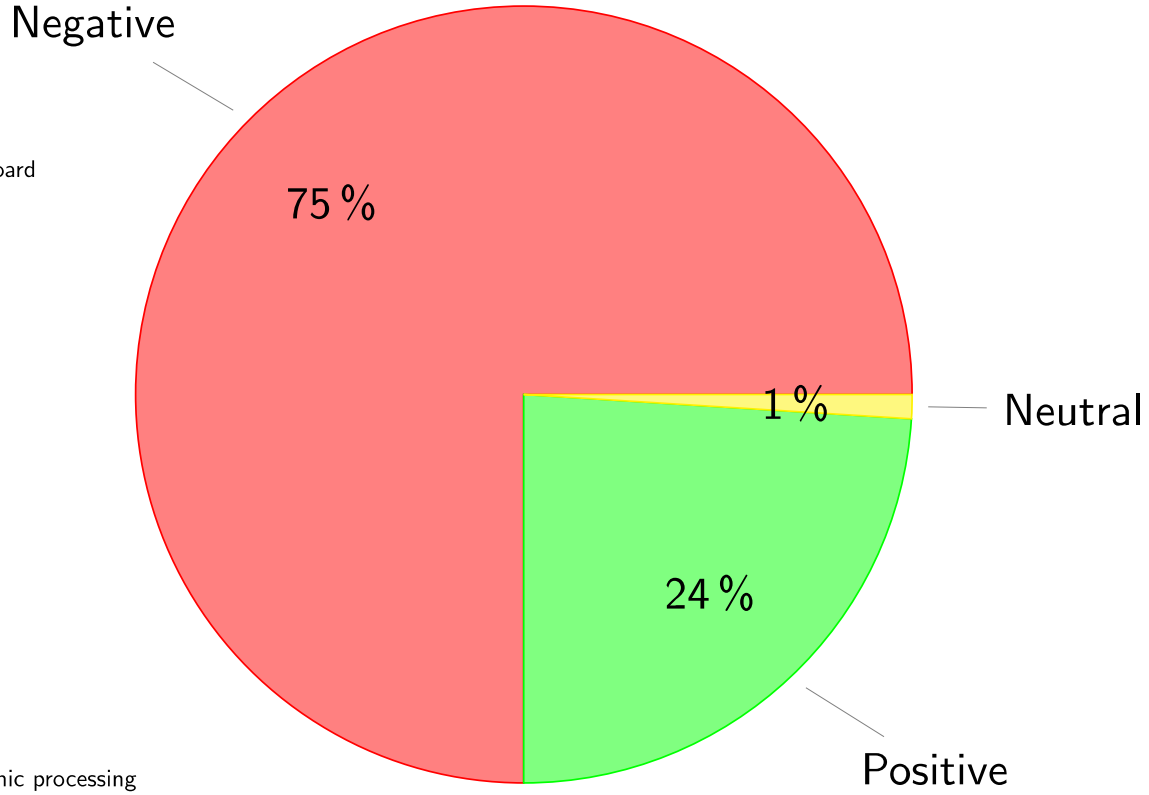






Why comments?

- Understand what is liked/disliked in mixes

  Ratings of mixes provide limited insight

- Disregard ‘bad’ mixes when analysing music production ‘best practices’

  Remove noise/bias from findings

- Obtain lower and upper bounds for certain parameters

  e.g. vocal level perceived too high for mix A, too low for mix B
  → desired level somewhere in between

- Acquire insight into semantic sonic descriptors

  What do terms like ‘*punchy*’, ‘*tight*’, ‘*blending*’, ‘*big*’, ‘*stuffy*’ … mean?

- Facilitate the assessment of as many as 10 different mixes, with very subtle differences

  Taking notes helps to remember why mix 1 was poor/excellent

Challenges

1. Which processor, device, feature, aspect?
   - Multidimensional
   - Esoteric terms

*"Drums are **flat and lifeless**, no **punch** at all."*

*"Snare is clear, but kick is **lugubrious**..."*

*"**Too much 'poof'** in kick. **Not enough 'crack'** in snare."*

*"Thinking if it had **a bit more 'ooomf'** in the lows it would be great."*

*"**I need some more meat** from that snare."*

Challenges

2. The good, the bad, and the neutral

“Pretty dry.”
“Lots of space.”
“Round mix.”
“Wide imaging.”
“Big vocals.”
“This mix kind of sounds like Steely Dan.”

Look at ratings

“A lot of reverb but kind of pulling it off.”
“Horns a bit hot, but I kind of like it except in the swells.”
“Hated the vocal effect but in the end got used to it, nice one.”
“Most reverb on the vocals thus far, but I like it.”

‘Good’ outliers

Challenges

3. Cryptic

“Vocals.”
“Get the music.”

Challenges

Automated transcription

“Why is the singer in the bathroom?”

“Where are the drums? 1 800 drums? Long distance please come home in time for dinner...”

“Is this a drum solo album instead of a lead female group?”

“Do you hate high frequencies?”

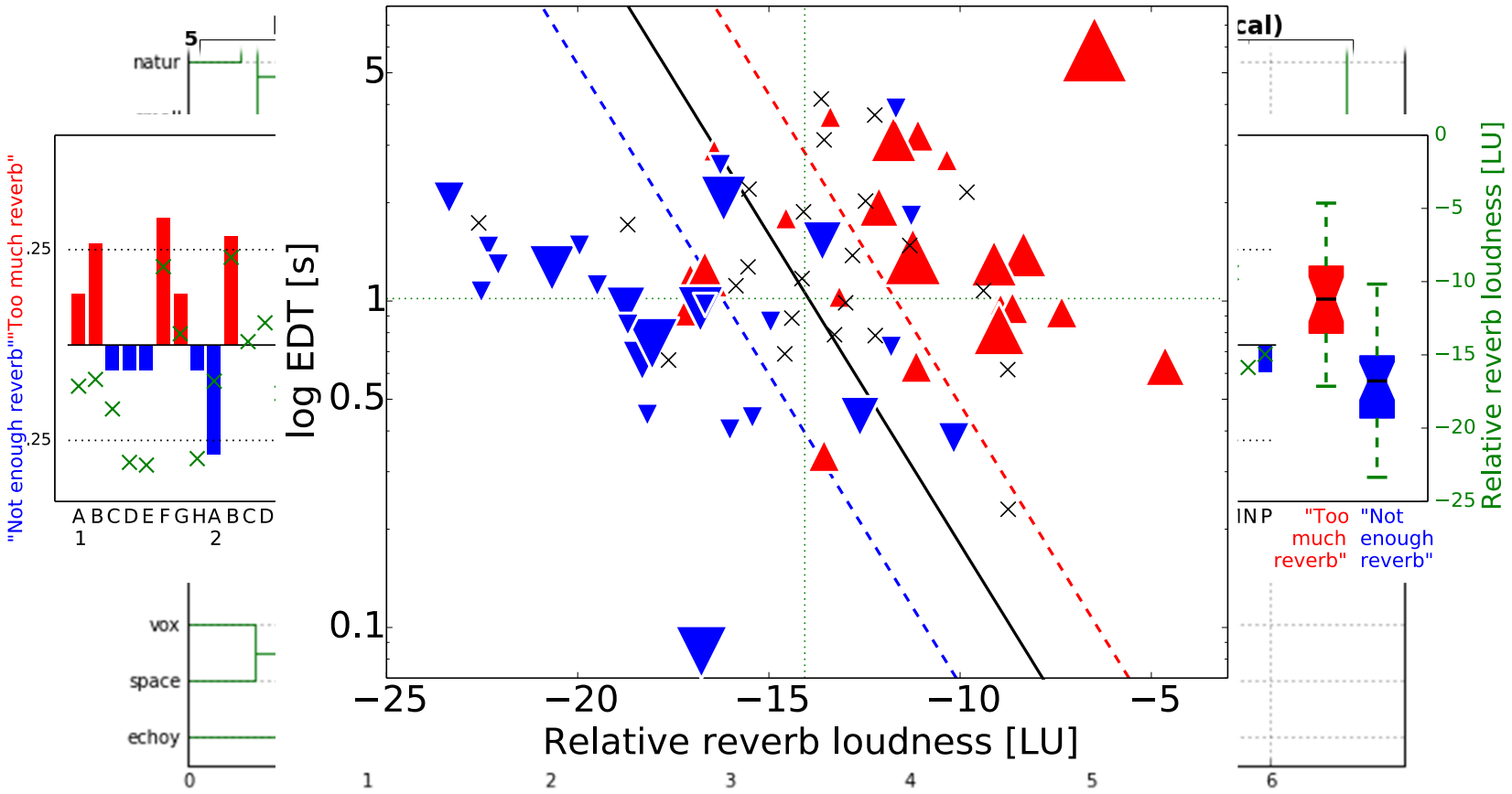
“Lead vocal, bass, and drum room does not a mix make.”

“No bass. No kick. No like.”

“If that was not made by a robot, that person has no soul.”

Future

- Subjective descriptions vs. objective features



Future

- Comparing various backgrounds
  - Different countries
  - Different schools of thought
  - Different skill levels

Conclusion

- Limited amount of data
  - Use subjective evaluation to zone in on interesting aspects

- Learn from bad examples
  - We have to
  - We want to
  - We can

Q & A

Figures

- *https://www.flickr.com/photos/siodoni/6537481161*
- *Kraftwerk 'The Robots'*
- *Microsoft Office 'Clippy'*
- *Microsoft MSN Messenger emoticons: :) and :(*
- *https://en.wikipedia.org/wiki/Behringer#/media/File:Behringer-Xenyx-1002FX.jpg*
- *https://pixabay.com/p-31362/?no_redirect*
- *https://pixabay.com/en/grand-piano-piano-music-161447/*
- *https://pixabay.com/en/bass-guitar-electric-guitar-axe-ax-155468/*