MUS302

ELECTROACOUSTIC COMPOSITION AND SOUND DESIGN TECHNOLOGIES

Week 1—Introduction…electronic music, sound in music and thinking in sound

Dr Brian Bridges

bd.bridges@ulster.ac.uk

www.brianbridges.net

Introduction: about this module...

- Exploring sound-shaping with technology

- Exploring how this creates new possibilities in sound and music

- Thinking about these possibilities, listening to examples and reading about composers/musicians/artists, their ideas and their work

- We're going to start by looking at some **early examples as prototypes** of different directions that electronic music would later take

Why do this module?

- of interest in expanding your vocabulary of sounds so that you can develop ideas for music production

- of interest in expanding your ideas (and listening skills) in relation to sound design techniques and technologies

- of interest for creating innovative and novel music compositions

Practical matters

- We will introduce a number of new sound design tools: SPEAR for spectral processing, SoundMagic Spectral plugins (also for spectral processing) and granulation

- When composing, editing, you may use whichever DAW/audio editor you are comfortable with, alongside these tools

- We will cover some technical bases and technical theories but this is primarily a class for creative exploration

- Notes/slides/assignment briefs will be emailed to you in the first instance

- CT students: notes will be updated on RT every couple of weeks (but will be in your email inbox weekly)

Q1. is electronic music any different from other types of music?

Q1. is electronic music any different from other types of music?

- <u>A 'signature' example of early electronic music</u>

- Another example - 'electronic sonorities' (Spotify playlist)

- Electronic jingles? (Spotify playlist)

- Early music made at an electronic music studio (Spotify playlist)

- Early music made with computers (Spotify playlist)

- Any observations on these examples? Is there anything fundamentally different about music which is made by electronic instruments or is manipulated by computer?

- Do the 'normal' rules of music change when using such materials?

Is electronic music any different from other types of music?

- A 'signature' example of early electronic music - *Doctor Who* - original theme (1963 - Ron Grainer, realisation by Delia Derbyshire, BBC Radiophonic Workshop)

- Another example - 'electronic sonorities' - *Forbidden Planet* (1956 - soundtrack by Louis and Bebe Barron - they weren't members of the Musicians' Union, hence 'electronic sonorities' and not 'electronic music')

- Electronic jingles? - 'Don't Beat Your Wife Every Night' by Raymond Scott, an early electronic jingle composer and owner for the first electronic music sequencer, this example is from 1961

- Early music made at an electronic music studio - *Klangstudie II* by Herbert Eimert and Robert Beyer, pioneers of the Cologne NWDR studio, the first electronic music studio in the world, this piece is from 1952

- Early music made with computers - *Mutations* by Jean-Claude Risset, 1969 - Risset had done pioneering work on computer-based synthesis at Bell Labs

Where did technology in composition come from?

- a number of different 'streams' or 'schools' can be considered to be the antecedents of today's technologically-mediated sonic arts

- **Futurists c.1900s-1930s (Italy, Russia)** - Spotify playlist - Luigi Russolo

- **John Cage and Conceptualism** (USA) c.1940s-1970s - Spotify Playlist - John Cage - 'Imaginary Landscape No.1' (1939)

- **Musique Concrète** (Paris) late 1940s - Spotify playlist - Pierre Schaeffer (1948)

- **Elektronische Musik** (Cologne) early 1950s onwards (discussion about studio predates this) Spotify playlist - Karlheinz Stockhausen (1958-60)

- **Computer Music** (New Jersey) 1950s - Spotify - Paul Lansky (later piece of computer music from 1979)

Variety of 'takes' on the music technology theme

- **Futurists** - music and musical life to imitate/celebrate new technology

- **Cage** - liberation of noise and 'non-musical/extramusical structures' in music

- **Musique Concrète** - liberation of noise/everyday sounds helping to provide an alternative to 'abstract music'

- **Elektronische Musik** - analogue technology as prosthetic enhancement of the 'abstract music' project - more control over tonal materials

- **Computer Music** - digital technology as 'prostethic enhancement' of the 'abstract music' project, integrating control over tonal materials with compositional control (algorithmic composition)

Music technology as *meme*

- *A meme* (pronounced |mēm|) an element of a culture or system of behavior that may be considered to be passed from one individual to another by nongenetic means, esp. imitation. (*Oxford English Dictionary*)

Music technology as *meme*

- *A meme* (pronounced |mēm|) an element of a culture or system of behavior that may be considered to be passed from one individual to another by nongenetic means, esp. imitation. (*Oxford English Dictionary*)

- **The term was coined by biologist Richard Dawkins in his 1976 work *The Selfish Gene.*** Dawkins coined the term in the midst of a work in which he traced various aspects of behaviour to genetic imperatives.

- In the case of some behaviours (i.e. culture), genes cannot be a factor. **This led him to the idea of a cultural counterpart to the gene, the meme**, which he theorises as being transmitted in an analogous manner.

- As you can see from the foregoing pages, various versions of the music technology meme have cropped up in a number of different places, but a number of these strands have produced somewhat distinct results…

music technology as meme c.1950
music technology as fractious 'alliance'

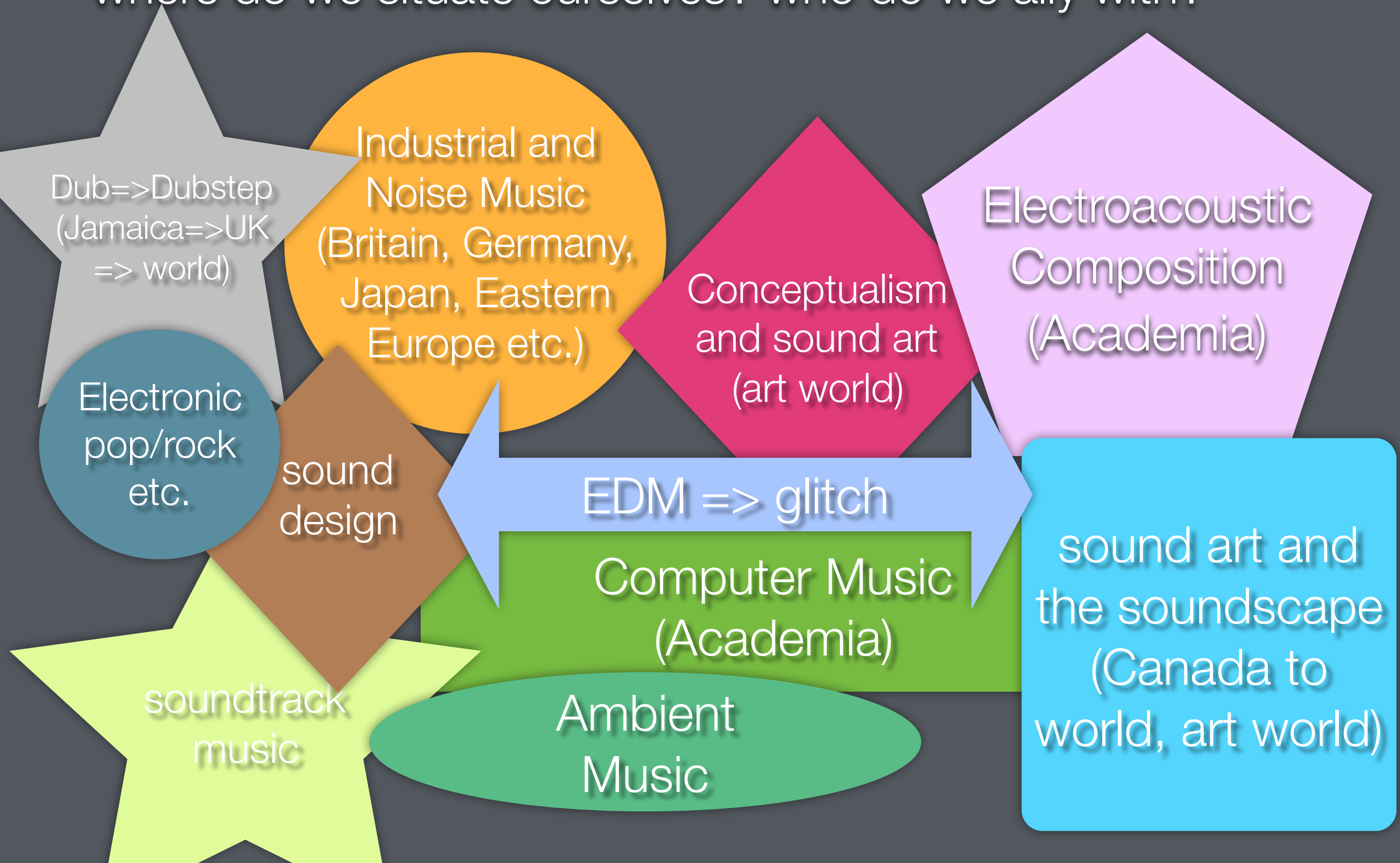Cage and conceptualists

Musique Concrète

Elektronische Musik

Computer Music

music technology as meme c.2017
exploratory use of music technology as fractious alliance
where do we situate ourselves? who do we ally with?

Dub=>Dubstep
(Jamaica=>UK
=> world)

Industrial and
Noise Music
(Britain, Germany,
Japan, Eastern
Europe etc.)

Conceptualism
and sound art
(art world)

Electroacoustic
Composition
(Academia)

Electronic
pop/rock
etc.

sound
design

EDM => glitch

Computer Music
(Academia)

sound art and
the soundscape
(Canada to
world, art world)

soundtrack
music

Ambient
Music

Early Music Technology/ Electronic Music Timeline

- **late 1897–1902:** Telharmonium (electric organ) invented

- **1913:** Luigi Russolo and the Futurists : *The Art of Noises*

- **1919:** Theremin invented

- **1935:** magnetic tape recorder

- **1948:** Pierre Schaeffer uses radio studio editing equipment to create a composed soundscape from recordings of a railway yard and creates **musique concrète**

- **1951:** Studio for electronic music (*Elektronische Musik*) founded at WDR in Cologne

- **1957(a):** RCA Music Synthesizer at Columbia-Princeton Electronic Music Centre in New York. 'Programmable' synthesiser with analogue sound generation (rhythms/sequences are programmable…sound generation is basic).

- **1957(b):** Computer music is born at Bell Labs, NJ**.** Max Matthews began to experiment with computer programs for sound synthesis and sequencing. This resulted in a family of music synthesis languages known as Music N (later, Csound)…text-based files would control the synthesis (orchestra files) and note sequences (score files).

Illustrated Video History of Electronic Instruments

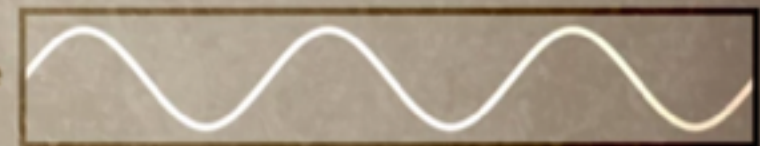1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 NOW

1970 Minimoog

Analog circuits produce sound.

Choice of 4 different waveforms

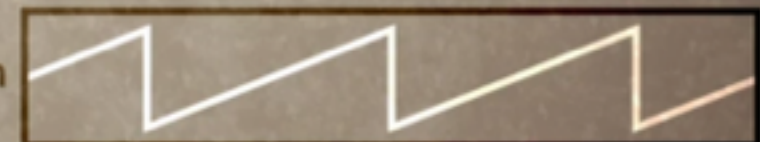Sine

Square

Triangle

Sawtooth

CONTROLLERS OSCILLATOR BANK MIXER MODIFIERS OUTPUT

* https://vimeo.com/47648018

Later Electronic Music Developments

- 1960s and 1970s: analogue voltage-controlled synthesisers

- 1980s: digital synthesisers, samplers and recorders

- 1990s: virtual analogue synthesis and beginning of real-time software synthesis on home computers

- 2000s: more software instruments, file sharing, iTunes, New Interfaces for Musical Expression, glitch (from late 90s into 2000s)

- Towards 2010s: multitouch, smartphones, gestural control, apps, apps as artistic output

Music technology throughout the ages

How important is music technology to music?
When did *music technology* start?
Does it depend on your area of interest?
Can we view history through the lens of music technology?

Moog synthesizer?
Amplifier for electric guitar?
Construction of player piano?
Pipe organ?
Constructed space for music
(Cathedrals)?
Pythagorean monochord?

Technology (and some form of scientific understanding) is inextricably
bound up with music (whether you like it or not!)
But is there anything different about current uses of technology?

Music technology as it affects musical practices?

- is there anything different about our current age, other than a slight difference in our choice of tools?

- different approach to materials (more sounds)

- move from obvious physical means of sound production to electronically-mediated means of sound production (does this change 'liveness'?)

- playing with limits of perception by using more 'extreme' sound materials

- battleground of philosophies…modernism, postmodernism, Pythagoreanism, mysticism, nihilism, utopianism, futurism, authoritarianism, libertarianism

Luddite music technologies and ideology and control

- With new music technologies come various patterns of adoption and rejection

- Computer-assisted composition and performance - labour-saving approach **or** greater control/ detail approach?

- Question of control is central - do you control a lot of parameters in great detail, or do you delegate?

- Approach possibly depends on context/aims…
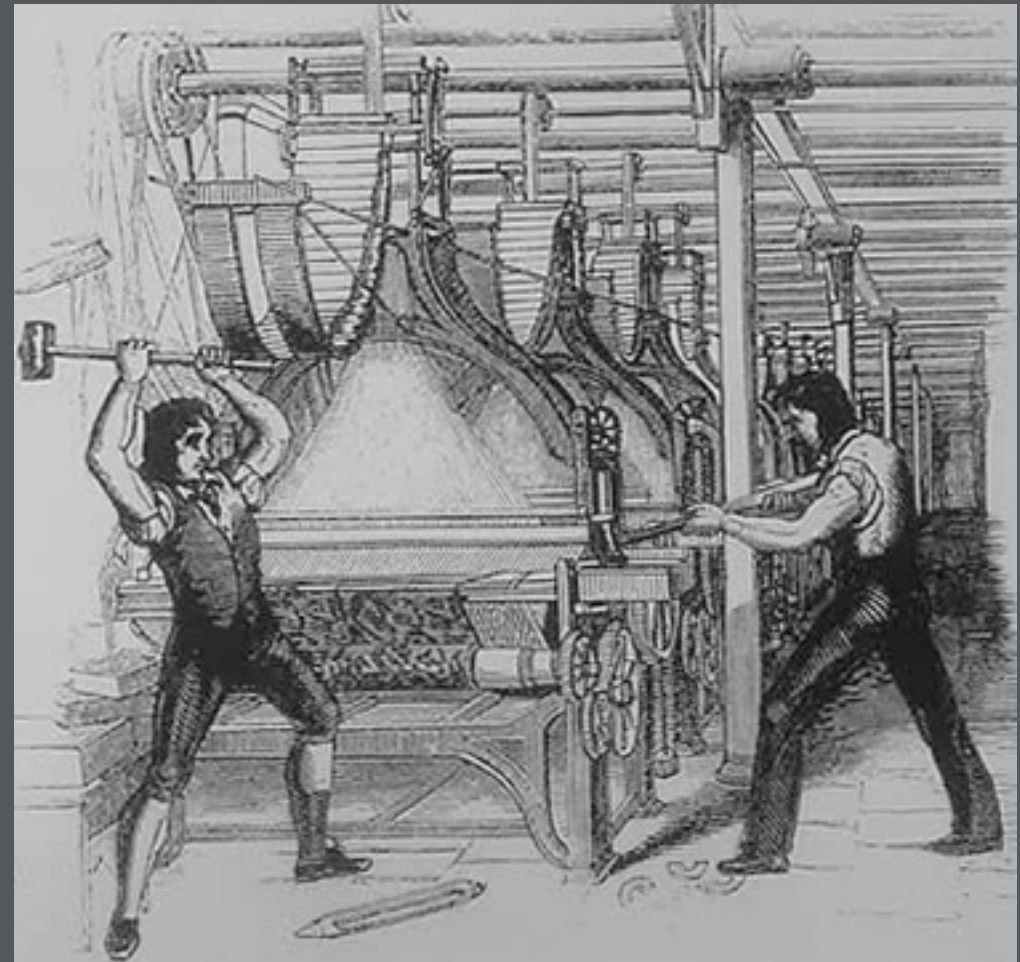
- Who are the Luddites? (presumably, 'the other guy/gal')

Luddite music technologies and ideology and control

- The additional use of acoustic (sometimes called 'real') instruments - is this contradictory in electronic music practices ?

- Is the use of practices derived from acoustic composition also contradictor?

- Is the use of / lack of a visual reference - is this something which is of key importance for music?

- With a spectrum from complete (admitted) automation through the appearance of performance (technologically-enhanced miming) to actual human performance, where and how does our sense of 'liveness', of occasion and artistic presence, come into the picture?

- See Emmerson, S. (2007). *Living Electronic Music*. Aldershot: Ashgate.

Extremes of perception and composition

- Some composition uses the freedom engendered by electronic sources and manipulation to **play with the possibilities of perception**

- Musical minimalism as conceptualism: what happens to perception of tones when you play them for a very long time?

- Elektronische Musik as conceptualism - Stockhausen's *Kontakte* (1958–60) asks 'Are pitch and rhythm really separate?'
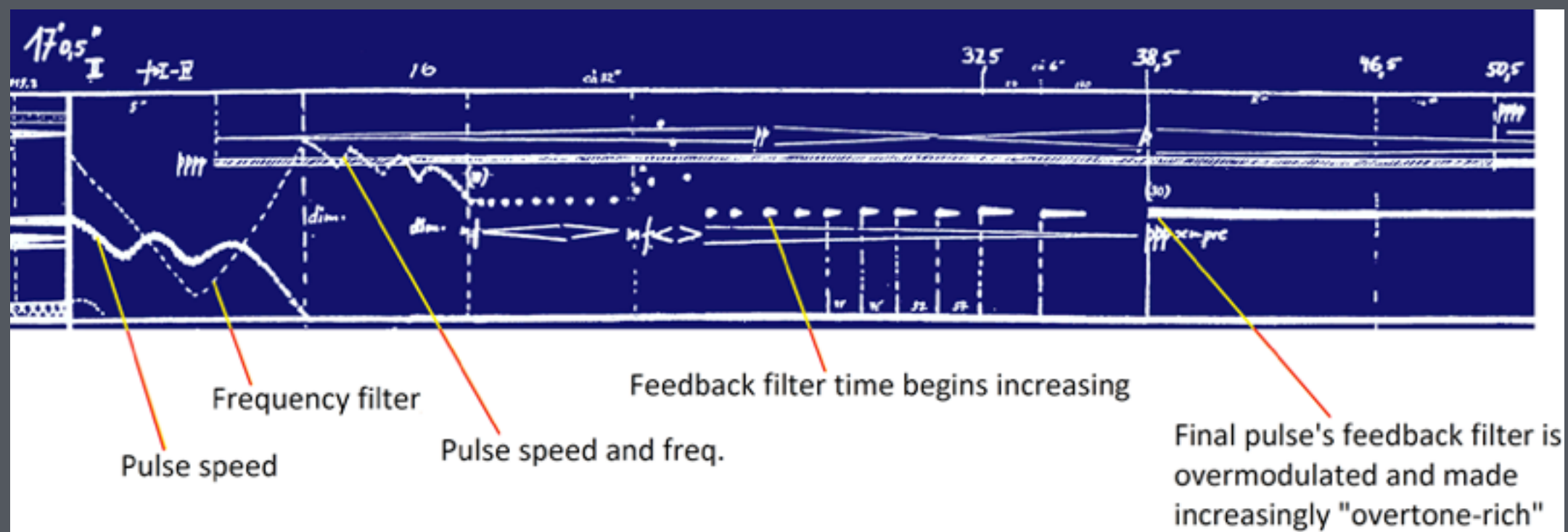
Minimalist Conceptualism (or just plain 'drone music')

- Phil Niblock - 'Five More String Quartets' (Spotify)

- Drone-based music based on the idea that drones encourage you to hear finer details (such as upper harmonics) which we frequently miss in normal listening

Elektronische Musik Conceptualism

- Stockhausen, illustration of 'pitch-time continuum' from *Kontakte*

KONTAKTE Structure X (listening score excerpt, colored):
A pulse-based noise tone wavers and falls. At the same time its frequency-filtered bright tone layer ("pitch", essentially) becomes darker and then brighter again. Then the pitch gradually zigzags down, slows down, plays a 7-note "melody", finally becomes individual pulses, gradually lengthening,

Postmodern music: plunderphonics

- Plunderphonics - composition which uses altered source material from other compositions/pieces of music

- With so much recorded music, do we really need to generate new source recordings? (quick why/why not discussion)

- Is plunderphonics an appropriate response to the proliferation of recorded music? does it behave in a patronising fashion towards popular music?

- example, James Tenney, *Collage #1 (Blue Suede)* from 1961

- Does the original source matter, after plundering has taken place?

- Do artistic (freedom) considerations transcend issues of copyright and original artist's feelings? (brief discussion)

Plunderphonics

4. With Lejaren Hiller in the University of Illinois Electronic Music Studio, 1961.

- James Tenney 'Collage #1 (Blue Suede)'

composer/producer/composer?

- **If modern-day producers use the same techniques as electronic / electroacoustic composers, are they now composers?** If not, why not?

- If so, what is the salient feature behind their rationale which draws them closer to composition than had previously been the case

- **Have the goalposts of composition moved? Have the goalposts of production moved? 'From the illusion of reality to reality of illusion?'**… (the original subtitle of Moorefield, V. (2005). *The Producer as Composer: shaping the sounds of popular music.* Cambridge, Mass.: MIT.) **Are the two converging or moving farther apart?**

- **HOMEWORK (1):** Set Reading for next week - 'Stockhausen versus the 'Technocrats'' (provided by email)

- **HOMEWORK (2):** Read my introduction to **electronic music**

- **HOMEWORK (3):** Listen back to examples from this class: https://open.spotify.com/user/impulseresponse/playlist/6zEWPS3iXoNvrryixj8gyy

Discussion of Assignments

(1) Sound gathering and cataloguing, with report: 40%

Deadline: Tuesday 25th Feb (week 5), to office before 12 noon

(2) Electroacoustic composition: 60%

Each student must submit an electroacoustic composition utilising musique concrète/found sound elements, plunderphonics (elements derived from recorded musical materials which are to be recontextualised), drone-based or other noise-music elements or a combinationof these materials and approaches.

Deadline: Thursday 11th May (week 13, after Easter break), to office before 12 noon