Cheatsheet for Cubase 10.5 Pro

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Contents

Abstract

I sum up some useful functionalities of cubase which I don't have in my head all the time. I don't need to search through the full manuals everytime I need to know something.

1 General Manual

Progress:

- General Manual: p. 1202/1202
- Plug-in Reference: p. 243/243
- Scores: 0/226
- Groove Agent SE 5: 0/144
- HALion Sonic SE 3: 0/124
- Library Manager 1: 8/8
- MIDI Devices: 0/37
- Padshop 2: 0/51
- Remote Control Devices: 0/76
- Retrologue 2: 26/41
- VST Transit: 18/18
- Manual for Voxengo Curve EQ

1.1 Skipped sections

Main Manual:

- Surround Sound (p.685)
- Using MIDI Devices (p.798)
- Synchronization (p.1068)
- VST System Link (p.1080) This can be used for distributing CPU intensive stuff to other computers and servers
- Rewire (p.1111) For streaming audio between two computer applications (which in this case means between a Steinberg and a Propellerhead program. But Reaper seems also possible)

Plug-in Reference:

- All the plug-ins only available for Nuendo.

1.2 My custom setup

- Edit > Automation follows Events is checked
- Edit > Preferences
  - Editing:
    - Set Default Track Time Type to Musical (this means they follow timing changes)
    - Check Part Get Track Names
    - Use Up/Down Navigation Commands for Selecting Tracks only
    - Automation follows events
  - Editors: Use Drum Editor when Drum Map is assigned
  - General > Personalization: Author Stella, Company Kuratorium Monokromat
  - MIDI
    - Check chase events for everything except SysEx
    - Insert Reset Events after Record
    - Audition through MIDI Inserts/Sends
  - Record: Check Stop after Automatic Out
    - Audio:
      - Split Files When Recording Wave Files Larger than 4 GB
      - Uncheck Create Audio Images during Record
  - Scores > Editing: Show Note Info by the Mouse
  - User Interface > Track & Mix Console Channel Colors: Check all boxes
  - VST:
    - Check Activate 'Link Panners for New Tracks
    - > Plug-ins: Check Suspend VST3 plug-in processing when no audio signals are received
- Project > Project Setup
  - Sample Rate: 96 kHz
  - Bit Depth: 24 bit float (this is necessary to record 32 bit depth)
- Studio > Studio Setup > VST Audio System:
  - Processing precision: 64 bit
  - Check Activate Multi Processing
  - ASIO-Guard to high (for a more stable performance)
  - Audio priority to normal
  - Check Activate Steinberg Audio Power Scheme
  - Check Adjust for Record Latency
- Studio > Audio Connections
  - For line6
    - Stereo Processed: Left → Send 1; Right → Send 2
    - Stereo Dry: Left → Send 3; Right → Send 4
    - Mono Processed: Mono → Send 1
    - Mono Dry: Mono → Send 3

  - For Mackie
    * Stereo: Left → Analog 1; Right → Analog 2
    * Mono 1: Left → Analog 1
    * Mono 2: Left → Analog 2

- Studio > Mix Console
  - Activate Channel Overview (or Meter Bridge), Channel racks, Control Room/Meter
  - Right click on Level Meters > Global Meter Settings > Meter Peak Options: Activate *Hold Peak* and *Hold Forever*

- Transport > MIDI Cycle Record Mode: Stacked

If some plug-ins of any kind or extensions are missing, fix the path or checkbox in Studio > More Options > **System Component Information**

1.3 Audio

1.3.1 Quality

- Set sample rate: Project > Project Setup
- Set processing precision: Studio > Studio Setup > VST Audio System
  - Consider that not all plugins support 64bit processing. Check this by accordingly setting the display options in Studio > -in Manager
- CAUTION: Recording needs RAM.

1.3.2 Useful Processing

- Audio > Generate Harmony Voices can give thin tracks more substance. If the original track follows a chord track, the additional harmonies are distributed accordingly
- Project > Convert Tracks > Multi-Channel to Mono: Can split the selected (or all) stereo or surround track into several monos. Settings are kept. The other way round is possible in the same menu.
- Select Event, select Event Editor, open Hitpoints section, click Create Groove and you get an according **Quantize Preset**
- Use the draw tool to draw **Audio Envelopes** directly on the event. Remove the points by dragging them out of the event or selection Audio > Remove Volume Curve
- Audio > Process (those are all direct offline processes, which are applied to the clip itself, not the event)
  - Normalize
- To free some hard drive space, minimize the files. But be careful. This is permament. If you want a copy with minimized files, use the backup option. To minimize, select all the files in the pool and execute Media > **Minimize File**.

1.4 MIDI

1.4.1 Input

On the top of MIDI track inspectors, there is a button for the input transformer, which allows you to filter out or change certain types of incoming MIDI messages before they are recorded - either locally or globally.

- Manage your MIDI Devices in "Studio Setup > MIDI Port Setup"
  - You can specify here, which devices are included when selecting "All MIDI Inputs" on a track (Remote Control devices should be deactivated here)
  - When experiencing persistent timing issues (like shift), activate "Use System Timestamp for 'Windows MIDI' Inputs"

1.4.2 Import

- Always activate Import Controller as Automation Tracks, so you can clearly see what automation there is
- Ignore Master Track Events on Merge kills tempo track information for the imported MIDI if checked
- Always Auto Dissolve Format 0. That way, embedded MIDI channels get their own track each

1.4.3 Export

In the export dialogue you have several options.

- Export as Type 0: All MIDI data is on one track, but different channels. If this is not checked, all MIDI from separate tracks will be on separate tracks in the export, which is nice.

1.4.4 Editors

You can create continuous pitchbends with the line tool. When drawing a parabola, you can press ctrl (reverse), alt (position change) or shift (increase/decrease exponent). In sine/triangle/square the Length Quantize determines the event density and they can be influenced via ctrl (phase of beginning), alt-ctrl (position change), shift-ctrl (maxiimum position) or shift (set period).

The automation also contains a lane for articulations/dynamics, where you can set velocities in classical categories like mezzo forte and so on, which can be configured in the Dynamics Mapping.

The automation editor contains some nice smart controls with tooltips, when editing several events at the same time. For some, you need to push alt.

In order to move the automation with selected notes, either activate Auto Select Controllers in the toolbar or use Edit > Select > Select Controllers in Note Range

Key Editor The chord editing section to the left allows you to enter chords instead of single notes. It also detects known chords when they are selected in the note display and you can change them or their voicing (Inversions/Drop Notesa). The Create Chords Symbol function is very neat and creates the respective chords from your MIDI on the chord track.

Drum Editor

- Place multiple notes by just pulling the pencil accross. The notes are set according to the quantization. Snap should be activated for this. Deleting works just the same
- The "house" in the toolbar allows you to only display those drum sounds which contain actual events
- The button with the two rhombi allows you to display event length as in the key editor
- When using a drum machine that supports drum maps (like Groove Agent), you can import it to the instrument track: Go to Drum Maps pop up menu and select Create Drum Map from Instrument.

Drum Maps do input conversion and output conversion. Input conversion is for MIDI devices. Let's say the pitch is C, the I-Note is A and the O-Note is E. If you play an A on your keyboard, a C is recorded. If a C is played back, an E is sent to the vst instrument. But be careful. If you want to export the track or work on it with a different editor, you need to execute MIDI > O-Note Conversion.

Score Editor At first, use MIDI > Scores > Staff Settings (or double-click to the left of the staff) to determine staff mode (single or split), quantize (only applied graphically; activate auto quantize and Dev. to make it look as legibile as possible), clef/key, transpositions (e.g. by setting the correct instrument) and interpretation (e.g. syncopation, which prevents displaying a dotted note at the end of a bar with ties).

The signature follows the tempo track settings.

In-Place Editor Can be turned off and on with a specific button on the track. Could come in handy in some situations. Also nice: You can drag and drop stuff from one track to another.

1.4.5 Expression Maps

Can hold information about how notes are played (e.g. sustain, pizzicato, hammer-on, pull-off, strumming, palm mutes, sliding). Access via MIDI > Expression Map Setup or in the Inspector of MIDI/Instrument tracks . The articulation is transmitted either by key changes or by program changes.

The maps can be extracted from VST3 instruments (e.g. track presets with pre-configured expression maps). If you have created an expression map, you should by any means save it.

Sound slots represent kinds of articulation. You can also create articulations that consist of several different articulations. In the remote area, define the key that triggers a certain slot from a MIDI device (latch mode means that the pressed key is active until another one is pressed - this is global for all expression maps). Articulations that are in the same group can not be used together.

The actual sound of the articulation needs to be defined in the Output Mapping.

The controller lane of MIDI editors provides a segment for articulations/dynamics, where different articulations are displayed in different rows. If they belong to the same group, they are shown in the same color.

Expression maps are also available in Score (Inspektor) and List (Comments) Editor.

1.4.6 Note Expression

Yield to the MPE standard. Each note gets its own MIDI channel, so expressions can be applied to individual notes. Thus you can apply expressions to single notes. This can also be seen in the editor. Not all plug-ins and devices support this.

Devices for this can be set up in Studio > Studio Setup. Select your connected device there.

There are MPE presets of Padshop and Retrologue available: Go to the Media rack, then VST instruments, Padshop/Retrologue tile.

The inspector holds a tab for Note Expression settings. The list is divided in two: On top are VST note expressions, on the bottom are MIDI controllers. The expressions Input Assignment can be set via the L-button (learning). Push it and move the desired knob on your MIDI device.

Adding an expression to a note is as easy as double clicking that note and making the desired adjustments with the draw or line tool. You need to select the desired parameter in the left-hand inspector. Deleting note expressions is a bit clumsier (but there might be a shortcut): Double-click the note etc, draw a rectangle and entf. Copy/paste via ctrl+c/v. You can also assign a key command to Paste Note Expressions to paste without having to open the expression editor for that note. That would be especially handy for pasting to several notes (but you can also select them and double-click, so...). Copy-pasting also works inter-parameter.

There are also Smart Controls for the Notes.

- Pull at the bottom right in order to increase the release length, so you can influence some ringing with note expressions.
- The other smart controls do the usual stuff

Some dedicated functions can be found in MIDI > Note Expression >

- Trim Note Expression to Note Length
- Remove Note Expression
- Note Expression MIDI Setup: Decide, which messages are used as note expressions. The Controller Catch Range lets you catch expressions that were sent slightly before the actual note. To record it, however, you need to activate MIDI as Note Expression in the Note Expression field inside the Inspector.
- Convert to Note Expression (is applied to MIDI control change messages)
- Consolidate Note Expression Overlaps: Necessary if the expressions of two notes overlap and the control changes might get confused.
- Distribute Notes to MIDI Channels: Necessary if not using a vst3 instrument
- Dissolve Note Expression: Converts Expressions to control changes.

1.4.7 Useful functions from the MIDI menu

All commands are accessed by going to MIDI > Command.

Transpose Setup Scales can be applied and ranges can be defined for max-min values. It might be fun to do some experiments with this to find new interesting melodies.

Merge MIDI in Loop This allows you for example to directly apply all the midi insert or send effects to an event and create a new event, which contains all this information.

Dissolve Part Create several parts from one, depending on channel or pitch (nice for separating drum computer sounds).

Bounce MIDI E.g. for bringing lanes together, just as with audio.

Functions >

- **Legato**: Extends the MIDI events such that they reach the following tones. A gap can be specified in Preferences > Editing > MIDI
- **Fixed Length / Fixed Velocity**: Applies the length from Length Quantize / Note Insert Velocity to the selected notes
- **Pedal to Note Length**: If you have recorded something with pedal, the pedal values are applied to extend the respective notes. This enhances the options for editing.
- Delete Overlaps (mono/poly): Removes overlaps for the same pitch / different pitches
- Delete Doubles: Removes doub le notes on the same pitch and same position
- Delete (Continuous) Controllers: This might be, what I have been looking for
- Restrict Polyphony: For instruments that can't play arbitrarily many notes
- Thin Out Data: Thins controller data s.t. an external device does not have to process a huge load
- Extract MIDI Automation: This may also be what I have been looking for. It extracts the automation visible in the MIDI editor and puts it on automation tracks. Only works for continuous controllers
- Delete Notes: Can be conditioned on properties like minimum length and velocity

Logical Editor Here you can write filters for MIDI notes, e.g. randomizing certain values like velocity or pitch. You can then assign them a key command. On p. 899 in the manual, there is a useful overview of the meanings of data 1 and data 2 for different event types. Or you can go to the dedicated section.

1.5 Special Tracks

1.5.1 Arranger Track

In the editor, you can set up your specific order. The up/down buttons navigate to the previous/next part, the left/right buttons bring you to the first/last repetition in a loop. The **flatten** option takes the arrange chain and transforms the current project to a linear project according to the arranger track. There are several options, e.g. creating a new project from it. Clicking the arrow on the left of an arranger element puts the project cursor its start.

1.5.2 Chord Track

You can let other MIDI tracks follow the chords track.

The events have no end. The end is determined by the start of the next event. The events can consist of a root note (e.g. C), a type (eg maj), a Tension (eg 7) and a bass note (eg F) $\rightarrow Fmaj^7/C$.

Double-click an event in order to open the **Chord Editor**, where you can create new chords. Activate MIDI Input to play the desired chord on a device. Inside the editor, there is also a **Chord Assistant**, which makes suggestions for the next chord (or for a chord in between to others, if you push the super non-intuitive Gap Mode button next to the complexity scale). As mode, you can set Common Notes in order to determine how many notes the chords should share.

In order to listen to the chords, you need to connect the track to an instrument track (done in the track controls).

Deactivate Automatic Scales in the Inspector to enable editing of Scale Events. Then click the first scale event and set root key and type in the info line. Now you can edit the other Scale events. There appears a keyboard when you double-click them.

If Adaptive Voicing is activated, only the voicing of the first chord can be changed. Voicings may become important when it comes to instrumental selection and genre. You can e.g. set it to piano or guitar. The configurable options (which determine the affected chords) depend on the chosen instrument.

There are some functions in Project > Chord Track >

- Chords to MIDI: You should prepare a track for this to work. Alternatively you can just drag and drop chord events to a MIDI or instrument track
- Map to Chord Track: Maps the selected events/parts to the chord track.Should also work with VariAudio stuff.
- Assign Voices to Notes: Depends on which voicing you chose. Is applied to the selected event(s).
- Create Chord Symbols: Extracts chords from the selected MIDI events or notes and adds them to the chord track

Crazy stuff: Create an instrument or MIDI track, choose **Chorder** as MIDI insert effect. Drag and drop chord events. Magic.

More crazy stuff: You can drag/drop chord events to HALion Sonic SE pads - all subsequent chords are automatically mapped to the following pads.

Instrument or MIDI track inspector > Chords > Live Transform > Scales/Chords: Makes sure that every key you hit is mapped to the scale/chord. Use Follow Chord Track to make an existing recording follow a chord progression.

You can record directly to the chord track. But also record enable a separate instrument or MIDI track.

1.5.3 Input Tracks

They can be seen in the mixer. You can also put effects here, but be cautious: The recorded audio file can't be stripped of those effects afterwards. It might, however, be good, to put some gate or slight compression here, so you can reduce the CPU load if you have to mix huge songs. When using such effects, always record in 64 bit depth to avoid clipping.

1.5.4 Multitrack

Some insert effects are not able to be applied to more than one (mono) or two (stereo) channels. By default, they are applied to the first sub-channels. You can influence this behaviour in the Channel Settings Editor > Inserts section > Routing tab.

1.5.5 Sampler Track

Can be handled like MIDI, but plays back the sample you have loaded in Sampler Control. Pay attention to the set root key.

1.5.6 Signature

You can also assign click patterns to signature changes, in order to get a specific groove (double-click the small plus at a signature event).

1.5.7 Tempo

The events have nice smart controls, which are pretty similar to those of other events.

Right-clicking the track lets you select all the events.

If your track has a fixed tempo, but you don't know it yet, you can use Project > Beat Calculator and use the Tap Tempo option, to tap on your space bar.

Material for Project > Tempo Detection must be at least 7 seconds long.

1.5.8 Transpose

With this you can transpose the whole song (and incoming recording) by several notes. It refers to the **Project Root Key**, which you can set in the Project window's toolbar. The Transpose Track's context menu gives you the option to **set root key for unassigned events**. But always make sure to always exclude MIDI percussion and FX (select the parts and set Global Transpose to Independent) when setting a root key or doing transposition.

The track has a button with an up- and down arrow inside brackets. This makes sure, transposes stay inside an octave, so you sounds don't get unnatural high or low.

When recording, existing transposition and root key is not taken into account.

The key editor toolbar holds an Indicate Transitions button. If pressed, the notes are shifted to the value of their true sound after being transpositioned.

You can change transposition also for events in the info line.

1.5.9 VCA Faders

They serve as remote controls for grouops of channel faders. They belong to a link group and control volume, solo/mute, listen, monitor and record. It can control only one link group. The meter displays the summed level of all channels linked in the group.

1.5.10 Video

Very limited. The only export format is Full HD. Supported Containers are MOV, MPEG-4 and AVI, but not all usual Codecs and framerates.

In Studio > Studio Setup, you can set up Output Devices for Video, e.g. if you have some hardware from Blackmagic Design.

1.6 Sampler Control

You can transoform the sounds and even export them (to Groove Agent (SE), HALion, Padshop Pro/2 and maybe other VSTs).

Simply drag some audio or MIDI in (from MediaBay, Project window or file explorer). Make sure to set your loop mode correctly. The harry potter scar hard resets everything, if you have a sample playing endlessly because you made dumb decissions.

You can do all the funny stuff like reverse the sample, only replay it at a fixed pitch, may it only replayable monophonic and transfer it to a new instrument (on a dedicated track).

In addition to set the sample start and end with smart controls, you can also set a sustain loop (depending on which loop option you have decided). Both with fades.

With AudioWarp you can adjust time stretching and formants (solo voice). If AudioWarp is deactivated, the sample is replied faster for higher pitches and vice versa. If you activate Legato, the Sample won't start from the beginning when a different note is hit, but just continue where it is now.

In the Pitch section, you are able to set a glide value, which is applied between notes.

Then you can still manipulate the sample by filtering it, applying amps and envelopes (small button next to Amp). The envelope has some modes:

- Sustain: Envelope is played from the first node to the sustain node, then held as long as the note is played.
- Loop: Applies the envelope from the first node to the loop nodes and repeats the loop. Thus you can add motion to the samples sustain time.
- One Shot: Plays from the first to the last node, even if the key is released
- Sample Loop: Preserves the sample's natural attack. Decay is not applied before the sample has reached the start of the loop

On the keyboard, you can set the root node, specify the pitch bend range as well as the range of the sample

1.7 Chord Pads

Can be found next to the Editors in the lower project zone. Pay attention to the button on the upper left. If it is activated, the chords are sent to all tracks, that are monitored or record-enabled. If it is deactivated, the chords are only sent to the tracks that have Chord Pads in the input routing.

The blue keys are the ones that trigger the pads, when played on a MIDI keyboard; the green keys can change voicings, tensions and transpose settings of the pads (this can be set on the Pad Remote Control page of the Chord Pads Setup dialog in the bottom left); the brown keys trigger sections (Player Mode needs to be set to Sections; you can change the keys in the Chord Pads Setup dialog).

The Chord Pads setup also allows you to change the pad appearance, number of octaves etc.

The pads have smart controls to

- Open the chord editor (mid-left)
- Blue border: chord is used for suggestions in the Chord Assistent; Yellow border: chord pad is set to adaptive voicing, meaning that all other chord pads follow its voicing. If no pad has a coloured border, adaptive voicing is applied automatically (except if you lock them, see upper right AV vs L)
- The arrows on the right allow you to change the voicing
- The arrows on the bottom allow you to add/remove tensions

In the context menu, you can set a pad to origin for the chord assistant, assign pads from MIDI input and do some other stuff. You can also assign the pads from chords on the chord track, when using the functions menu (downward arrow to the left). The functions also allow you to tie the pads to the grid, such that the playback of a triggered pad starts at the next defined musical position. This is especially worthwhile when working with arpeggiators. It is also possible to transpose all pads.

The comment-like button to the left opens the Chord Assistant.

The e-button brings you to the Player Setup, which is full of useful stuff. For example you can choose Pattern as Player Mode to play arpeggios. A MIDI loop or part can be used as pattern, e.g. via drag&drop, but the loop mst have between 3 and 5 voices - you can see the voices in the Media Bay. The Player Setup can be different for each track.

Drag-dropping chords swaps them. Alt-drag-dropping copies the chords.

1.8 Events

1.8.1 Audio (and alignment)

Events are not the same as files (which are referred as audio clips). The event triggers the playback of one or several files.

- Audio > Bounce Selection creates a new file from an event
- Audio > Open Audio Alignment Panel (or the button in the Project window toolbar)
  - Match words: For vocals. It matches the lyrics. Very wow.
  - Audio in musical mode must be bounced first
  - Does not work on tracks modified by VariAudio or AudioWarp
  - The used algorithm can be changed in the Sample Editor toolbar (e.g. élastique)

Sample Editor Can edit several Events at the same time.
Can apply time stretch.
Can directly edit Audio Samples with the draw tool (e.g. for removing audio clicks by hand)
You can select a range and drag it to an audio track in the Project window to create a new Event.
A sample can be divided into regions. This might be useful for longer takes or podcasts. You can also create regions from hitpoints.
The super usefull menu on the left holds:

- Definition
  - Displays a second ruler with the sample bars. If it is different from the project's, the musical mode will adjust the audio sample according to the selected algorithm.
  - Auto adjust exteracts a tempo definition grid for the audio sample. If it doesn't fit, the manual edit has some powerful manipulation options
- AudioWarp
  - Activating the Musical Mode automatically fits the audio file to the beats and bars of the project. The audio events behaves like a MIDI event.
  - Can add swing (musical mode is necessary) according to the grid resolution
  - Free warp allows you to just drag around the audio and time stretching is applied automatically. Dragging the warp markers at the top triangle allows you to correct their position. Alt+clicking deletes the markers (can also alt-click-draw a rectangle).
  - If you have fucked up, go to Audio > Realtime Processing > Unstretch Audio
- VariAudio
  - Any Offline Processing or plug-ins should be applied **before activating VariAudio**
  - Optimized for monophonic recordings
  - Select Relative Pitch Snap Mode if the tones should keep their off when moved to a new note
  - Select a MIDI reference track at the bottom. This will be usefull for vocal lines
  - Formants are basically the vocal overtones. Shifting this should not affect the pitch or timing
  - Each segment has smart controls:
    - Top left/right rectangles: tilt the pitch curve. Alt+drag rotates the curve
    - Top center rhomb: Tilt/Rotate Anchor
    - Top center rectangle: Straighten the pitch curve
    - Top left/right triangles: Range for straightening the pitch curve (default: entire pitch curve)
    - Left and right rectangle: Warp start and end. Can be corrected with alt+drag

    - Bottom right rectangle: Volume
    - Dotted bottom line: Glue segment to adjacent sections, if they should belong together
    - Straight bottom line: Split segment
    - Bottom rectangle: Quantize the pitch to tthe nearest semitone
    - Bottom left rectangle: Shift segment formant
    - The segments' color can be adjusted in the toolbar
  - Shift + Double-click selects all following segments of the same pitch
  - Alt-click on MIDI-Input to activate step mode: After assigning one segment, the next one is automatically selected
  - When VariAudio is open, you can range select notes with the same tone Edit > Select.
  - The functions allow you to extract MIDI from the audio. Thus you can underlay it with some nice pads

- Hitpoints
  - They are generated automatically, but can be edited by fine-tuning the detection parameters or by hand (shift-click to remove, alt-click to add, drag-drop)
  - There are some processing options like
    - Produce slices, Markers, regions or events (for multiple tracks like drums use Audio > Hitpoints > Divide Audio Events at Hitpoints together with group editing)
    - Create a Groove Quantize Map: The Groove is applied to the Quantize Panel in the toolbar
    - Create Warp Markers: They can then be edited in the AudioWarp section (see above)
    - Create MIDI Notes (with a fixed pitch and length)

- Range
  - Allows you to create a Sampler Track from a selected range.

- Process
  - You can create a region from a selected range or event
  - Direct Offline Processing can be applied to a range or event as well as insert effects or other audio processing
  - If all this processing consumes too much **CPU**, you can use thee respective option in the menu or (for multiple files) select the affected audio events and Audio > Realtime processing > Flatten Realtime Processing

1.9 Effects

1.9.1 Offline Processing

Open via Audio > Direct Offline Processing or F7.

Can help to largely reduce the used disc space. When performing offline processing, the original files are kept. But if you edit stuff to prepare it for mixing, you could also throw away the old files when you are done and happy with the result. Another advantage is, that it reduces CPU usage.

The tool itself is very flexible. You can add plug-ins, fx chain presets, track presets even by dragging them from inserts. You can even drag entire racks from the mixconsole into the DOP Window or load FX chain presets and track presets (Select Preset). And you can copy/paste between several processed Audio files (context menu in the processing list).

With the audition button in the toolbar, you can play the part with the effects from the first to the selected one. You can also add tails and adjust the range, in case you use delay or reverb or smth.

DOP can be applied to (multiple) clips in the Project Window, in the Pool and to ranges in the Sample Editor.

For effects with learning effect (e.g. noise reduction) you should deactivate Auto Apply and use the **Audition Loop** and activate Audition. Train it on a piece that only contains noise, then click discard (the plug-in keeps the parameter settings), select the whole event(s) and apply.

If a stereo effect is applied to a mono channel, the left side of the effect's output is used.

If you start to use this stuff frequently, you can set up your favorites. If you drag multiple effects in this section, they are batched, so you can apply them more easily. But be careful: batches are always instantly applied, even when Auto Apply is deactivated.

If everything is nice: Audio > Make Direct Offline Processing Permanent or choose Make All Permanent in the DOP Window.

Built-in effects are: Envelope (for volume), fades, gain, phase invert, normalize (peak or loudness) [for track : peak $\in [-50, 0]dB$, loudness $\in [-34, 0]LUFS$], pitch shift (also working with chords and with or without time stretch), envelope-based pitch-shift (the curve determines the height), remove DC offset option (strom; determine if there is an offset with Audio >), Resample, Reverse, Silence, Stereo Flip and Time Stretch

Time Stretch and Pitch Shift algorithms

- élastique
  - Poly- and monophonic
  - Pro Formant includes formant preserevation (but what is formant?)
  - Time mode favors timing accuracy, Pitch mode favors pitch accuracy
- MPEX
  - Has a solo (monophonic) and poly (mono- and polyphonic) mode
  - Musical mode recommended
  - Poly Complex has high CPU consumption
- Standard
  - Optimized for CPU efficient real time processing
  - Holds presets for Drums, Plucked, Pads, Vocals, Mix and Solo (monophonics)
  - Warp settings can be customized. Low grain size for material with many transients, higher Overlap for audio with stable sound character
- All of the algorithms can lead to degradation in audio quality and produce artifacts.

1.9.2 Insert Effects

Post-fader effects are also post-EQ. This is good for things like Dithering or maximizing.

In order to reduce processor power, you can freeze them. But the tracks can not be edited anymore. But make sure to add some tail, so reverb and stuff aren't cut off.f

1.9.3 Send Effects

- By right-clicking, you can make them pre- (blue) or post-fader (orange)
- In the channel editor, you can activate **Link Panners** from the functions (small arrow in the top right)

1.9.4 Side-Chain Input

Available for modulation, delay and filter.

Especially good for adding compression to a bass when the drums are hit. Or for ducking a delay when the track makes a noise. For the latter, duplicate the track and set the duplicate as Side-Chain Input for the delay. When you use the side-chain of a modulation, the input's envelope is used for modulation, which can do crazy stuff.

1.9.5 Extensions

Those are handled different than plug-ins. E.g. they can have their own editor. Melodyne is an extension. You can't perform Hitpoint, Warpstuff, DOP, Time Stretch, Harmonies or Audio Alignement with Events that have an active extension. To do that, you have to bounce the event.

1.10 Automation Panel

Open with F6. Useful for displaying/suspending/... reading or writing automation of a certain type. Also there are some options which influence, how writing is applied.

There are some modes for writing automation:

- Touch: Punches out as soon as the automation control is released and returns to previously set value (return time is adjustable).
- Auto-Latch: When releasing the controller, the last value is held until punch out
- Cross-Over: Allows smooth transitions between new and existing automation. As soon as you cross the old automation curve, the writing punches out.
- Trim: Allows you to adjust already written automation

Fill options (when Touch is activated) - they work with the drawing tool, too:

- To Punch: Move the fader until you have the value you want. On release, you punch out and the value is set for the time between punch in and punch out
- To Start: Same as the punch, but between Project start and punch out
- To End: Between Punch out and Project end
- Loop: Punch out value is set between the Locators

In the settings tab, you can - amongst other options - check Continue Writing on Transport Jump. This will help you writing automation when jumping here and there or when the replay passes a cycle or if you are using the arranger functions. The Reduction Level value influences, how much an automation curve is smoothed after writing.

When using an external MIDI device with automation capabilities, you can set the behaviour in MIDI > CC Automation Setup.

SysEx contains information for external MIDI devices.

1.11 Control Room

You can set up your whole control room setup (including talkback, cue, headphone, additional inputs, multiple monitors, etc) here. This might be cool as soon as you have an external cubase controller.

The channels are set up in the Audio Connections. Ports can not be assigned to a Control Room Channel and a regular Bus or Channel at the same time.

Metronome can be activated separately for cues.

In Channels, you can solo individual channels to make sure they are wired correctly.
You can define Downmix Presets, if you want to do more than one mixdown at a time.
The main output has a volume knob which does not affect the actual Main Mix level for mixdowns.
You can select channels in the mix and then create a cue from them. Use the context menu in the cue area.

Inserts tab. Here you can adjust things like input gain and phase, add insert effects (brickwall limiter would be good to avoid accidental overloads). All Monitor Inserts are past Control Room Fader.

1.12 Media Bay

Some of the advantages are also mentioned in the section about the Media Tab amongst the efficient workflows.

The checkboxes in the Filebrowser tab to the left indicate, if the folder is scanned. Orange checkmark indicates, that at least one subfolder is not included in the scan. Red folders are currently being scanned, whites have bin scanned, yellows have at least one unscanned subfolder.

The preview section at the bottom can align the file to the project beat. This may apply real-time time stretching

The search function can handle boolean operators:

- and: and / + (default operator → always set, if no other is specified)
- or: or / ,
- not: not / -
- parentheses: ()
- quotation marks: for sequences of words, to evade the default and-operator. Or words with hyphens, to evade the not-operator
- wildcards: *

If you choose mulitple attributes in the Logical Search, they are by default connected with an xor-operator.

The context menu in attribute search enables you to find files which have attributes in common.

The attribute editor enables adding attributes to files. They can act as kind of labels, which make navigation easier for you.

In order to make the attributes, you set in the media bay, accessible on other systems, you will need to create a **Volume Database** by right-clicking an external medium in the filebrowser. Available Volume Databases are mounted automatically.

Samples can be previewed from the media bay and their beats can be transformed to the project tempo by activating a button at the bottom. If the sample is then dragged into the project, the name also contains the tempo (and the key, if there is one).

1.13 Mixing and Mastering

- You can normalize your whole track: Audio > Processes > Normalize
- Display Peak Level, DC offset, loudness (RMS) and much more with Audio > Statistics
- Have look at the **Spectrum** of a part (or song, during mastering) with Audio > Spectrum Analyzer

1.13.1 Mix Consoles

Mix Console in Project Window In the left portion, you can access the pages "Faders", "Insert Effects" and "Send Effect".

Mix Console (F3)

- You can take snapshots of your current settings (Left side) to compare different versions of a mix. Up to 10 snapshots can be saved. Automation data is excluded from this. Youo can also take useful notes below the snapshot section.
- Have a look at the visibility stuff written somewhere above
- Toolbar:
  - Rack can be used to show everything contained therein
  - The state buttons enable you to bypass inserts, sends, eq, ...
  - Super powerful link group, like suspend linking ()sus), absolute mode (abs) and temporary link (Q-Link → shift + alt + click is super convenient for configuring several tracks at once without linking them permanently)
  - Configuration (in addition to the configuration in the left zone) also holds zone settings and show/hide of racks
  - Linking channels (can be configuered pretty freely):
    - Adds a *display line* for all channels, where you can change the settings and add and remove channles from the group
    - Make changes on a single channel by alt + click it or activate *Sub* in the toolbar
    - Make absolute instead of relative changes by activating *Abs* in the toolbar
    - You can assign a VCA Fader
    - Automation tracks are not affected
  - In the funktions, you can *Reset MixConsole Channels* to bring volume faders to 0 dB and pan to the center. You can also link several mix consoles so you can display the same stuff on different monitors
- Move faders slowly by pressing shift
- Stereo in/stereo out channels can have a special panner type (context menu)
- Exclusive solo via strg + click solo, solo defeat via long click or alt + click
- With the listen button (below solo/mute) you can send the signal of a channel directly to the control room
- Drag and drop one channel onto another to copy its settings (press alt if you also want to copy directt and output routing)
- The rack is super convenient for routing
- **Low- and highcut** should be done in the pre-section (this is still displayed in the EQ settings, which is nice), just as **phase and (pre-)gain** stuff
- Inserts:
  - In the context menu click *Set as last Pre-Fader Slot* to enable **Post-Fader Slots**
  - In the context menu of some effects, you can activate side-chain

- In the graphic EQ, modify *only frequency* by holding alt, *only gain* by holding ctrl, *only Q* by holding shift.
- The channel strip holds some built-in processing, so you don't need to put that necessarily into the inserts. Those elements can be moved by drag and drop.
  - Noise gate with thresh, range, attack, release, monitoring option, internal side-chain (frequency, Q factor)
  - Compressor: Standard, Tube (smooth and warm; internal side-chain) or Vintage (has Attack Mode which conserves the punches)
  - EQ with 4 bands
  - Tools:
    - DeEsser with Solo function for the frequency band that is searched for sibilants and a diff function, so you can hear the signal that is removed from the original
    - EnvelopeShaper for boosting or attenuating attack and release phases
  - Sat (adds warmth)
    - Magneto II and Tape Saturation: Simulate analog tape machines. HF-Adjust sets the amount of high frequency content of the saturated signal. Has a solo function so you can determine the appropriate frequency range
    - Tube Saturation: Siomulates compression of analogue tube compressors
  - Limit: Brickwall Limiter, Maximizer or Standard Limiter. Brickwall creates a latency of 1 ms, so only use it for mixdowns.
- Send: If you don't have the desired fx channel yet, you can click on an send-slot and then select *Add FX channel...*
- Cue is rooted to he Control room. They are kind of aux sends. Cue channels need to be added to the Control Room in the Audio Connections (F4)
- Direct routing is post-fader and -pan and allows to create **different mix versions in one go**. Add the same destination for multiple tracks by selecting them and then shift-alt-clicking the first slot. Switching destinations can be automated by activating write for the desired channels and then switching during playback. Here again you can hold shift-alt to switch all selected channels. The context menu allows you to activate summing mode → you can select **several destinations**. But you may rather use sends for such things. The first option in the direct routing should always be the one with the most subchannels.
- Quick controls allow you to access things you tend to change often quickly
- Device Panels is for external MIDI devices, audio track panels or VST insert effect panels
- The latency display shows the per-effect-latency in detail
- Make use of the Save as Default Preset option for stuff you always adjust, e.g. disable auto make-up in compressors

1.13.2 Channel Settings (e)

You can see EVERYTHING here. Everything you can manipulate in a channel.

- Super mighty navigation. Left-right goes to previous edited channel, up-down navigates through the mix console. The left-right in the middle navigates through the audio chain, i.e. to in- and output channels

- You can display the **Output Chain**
- The EQ has a comparison mode. Super nice. There are also a few options concerning the display referring to FFT if you click the gear.

1.13.3 Metering

In the right of the project window. Allows you to estimate what to changes to make on your whole mix.

EBU (European Broadcasting Union) scale is the recommended standard. The scales reach from from -18 LU to 9 LU / - 31 LUFS to 14 LUFS (EBU +9) or from -36 LU to 18 LU / -59 LUFS to -5 LUFS (EBU +18).

LU are measured in dB, as well as LUFS. the latter can be seen in the AES17 scaling.

As for loudness (second tab at the bottom of Meter), there are those thingies:

- LUFS (Loudness Unit, referenced to Full Scale) is the average loudness measured over the whole track. Audio should be normalized at -23 LUFS ($\pm 1 LU$) - also called *Integrated Loudness*. That is displayed by the triangle to the left of the meter scale
- *Short-Term Loudness*: Measured every second on a block of 3 seconds, to give information about the loudest passages. This is displayed by the triangle to the right of the meter scale.
- *Momentary Loudness*: Measured every 100 ms in range of 400 ms
- LU (Loudness Units): Dynamic range over the whole title - ratio between loudest and quietest non-silent sections. This is displayed as range in the Loudness tab. Can help deciding, how much **compression or expansion** the track needs. A recommendation for highly dynamic music (e.g. for movies) is a 20 LU.
- *True Peaks* can be measured in opposition to digital peaks. This helps avoiding clipping and distortion. Maximum should be -1 dB.
- In the settings, you can define when clipping should be indicated for Momentary Max, Short-Term, Integrated and True Peak. The AES17 standard adds an offset of 3 dB to the RMS value.

1.14 Audio Export

- For CDs, use 44.100 kHz and 16 bit. Also add dithering (UV-22HR), if you recorded in better quality.
- Use realtime export if you have external effects or instruments; or plug-ins that require time to update correctly during the mixdown.

1.15 Exporting and Archiving Projects

- Make sure the project is self contained:
  - Media > Prepare Archive verifies that all referenced clips are contained in the project folder (does not account for videos)
  - File > Back up Project: Stores the project in a new location. Original project remains unchanged.
  - The Update Display option makes sure, that you can see, if and where clipping (or general high peaks etc.) occur.

1.16 Tips for efficient workflow

- In the **Left Zone**, there is a visibility-tab which allows you to hide tracks. You can create custom configurations for this with the respective tool from the toolbar
  - Click the equals sign next to "Visibility" in order to syncronize the tracks' visibility with exactly one mix console visibility (Channels in the left/right zone of the console as well as tracks in the top part of a divided track list are not affected by this)
  - The settings are also applied to the Mix Console in the Lower Zone
  - When the visibility tab is open, you can click the Zone-Tab in the bottom. This allows you to lock channels to the right/left of the mix console
- Right click on a track and go to **Track Controls Settings** (or click the gear at the bottom of the track list) the) to adjust the available controls and their layout for each track type
- On top of the track list, there is a useful visibility filter (Press return when several tracks are selected to toggle them all)
- You can activate the **Transport Bar** at the bottom of the Project window in the "Set up Window Layout" menu
- Opening multiple tabs in the Track/Editor Inspector: strg + click
- The **Media** tab in the **Right Zone** contains basically everything from VST-Instruments to samples and a shitload of customizable presets. There even is a file browser, yay! You can drag and drop vst effects to either insert or send them somewhere or create an FX channel track. Same goes for Track Presets. For more, you can open the Media Bay wiht F5.
- On the top right of the Project Zone, there is a slider which lets you zoom in on wave parts
- Edit → History allows you to navigate really fast and smooth by moving the separator, allowing you to quickly compare changes
- Editing
  - alt + shift + 1: Combinates object selection (lower half of track) with range selection (upper half of track) (also works in track automations → you can automate sections)
  - Pressing 1 repeatedly: Toggling stretching modes: Normal, sizing moves contents, sizing applies time stretch
  - strg + alt in object selection mode: moves the contents within a a part
  - strg + shift in range selection mode: creates global range
  - When having recorded several takes, you can show them by clicking the Show Lanes button for the track
- When adding new tracks, don't righ click, but use the '+'-symbol on the top left of the track list. So you can immediately set configurational stuff.
- Work with track versions instead of different cubase files
- Things for which macros might be usefull:
  - Put selected tracks into folder and add a group channel
  - Duplicate track without data
  - Export whole song

  - Move selection to new track version

- File > Import > Track from Project: Allows you to import a certain track from another Cubase project
- For tracks inside **Folders**, you can activate **group editing**. Every edit done to a track in that folders is also applied to the other ones.
- Project > Track Folding > Move Selected Tracks into New Folder
- When changing **signature** or **tempo** in a song, just use the goddamn signature and tempo tracks
- In the signature track, you can also set up **click patterns**. Even triplets in 4/4 signature is possible. Click pattern can also be set in the transport bar.
- Selecting something and pressing **ctrl + d** can **duplicate** almost anything
- You can save the settings on a track as a preset (context menu) and then create tracks from the preset (the sign next to the plus over the tracks). They can be categorized with attributes in the MediaBay. Presets for several tracks are also possible. But in that case you might just want to create a template. Also nice: Most components (like insert effects, EQ, ...) have a From Preset option, when right-clicking. This extracts the specific portion from an existing preset.
- Changing height of all tracks: Hold ctrl while dragging
- Use the **Draw tool** to super nicely adjust stuff like **Clip volume process**
- Press ctrl + return when renaming a track → **renames all the events**
- Selecte the cut-tool and press alt while cutting → The event is **split into parts of equal length**
- Holding shift while repeating an event creates a shared event (MIDI). It can later be converted to a real copy (Edit > Functions > Convert to Real Copy)
- Select parts, that belong together (e.g. in a part) and then Edeit > Group. Selecting, moving, duplication, resizing, fades, splitting, locking, muting and deleting is applied to the group as a whole. Also every folder track has a group editing symbol (=) which allows you to handle the events inside the folder as a group.
- Phase of an audio event can be inverted by selecting the Invert Phase option in the info line
- Edit > Select > Equal Pitch can select all the notes with the same pitch in an event. You can also shift-double-click a note to do this.
- The click pattern can be displayed in the transport bar
- If you have no MIDI keyboard at hand, try Studio > **On-Screen Keyboard**
- In Studio > Studio Setup > MIDI Port Setup, you can name the midi devices (display as) so you don't have to gues which one you need to use as input
- When recording MIDI, you can record the notes and other stuff (like pitchbend, modulation, sustain, volume) on separate tracks, but replay them at the same time by sending them to the same output and MIDI channel. Same goes for program changes.
- MIDI > Reset if something like pitchbend or vibrato or sustain is hanging

- Quickly quantizing MIDI notes by selecting the desired value and pressing q. Note length is maintained. They can be quantized by Edit > Advanced Quantize > Quantize MIDI Event Lengths (this cuts off the ends, so the lengths fit the defined value)
- The same can be done for audio events, if AudioWarp Quantize is activated. Quantizing aligns the warp maarkers with the quantize grid and stretches or compresses the stuff in between. Also works on several audio tracks with same start and end time in a folder which has Group Editing activated
- When setting up a quantization, use Catch Range (for MIDI, only parts within the range are considered in quantizing; for Audio, hitpoints in each others range are considered to belong to the same beat) and Non-Q (events within that zone are not quantized, so you keep the groove alive). If there are no slight variations, you can create them with the Randomize value. Activate Mode, if you don't want the events to fully move to the specified grid positions, but only up to a specified percentage. Activating MIDI CC also moves the control data. Pre-Q, if available, lets you quantize to a grid first, before it's quantized to your groove.
- You can capture the groove of MIDI and audio events by simply dropping them into the Quantize Panel. Awesome!
- Punch in/out: If you deactivate the lock, you can set the punches between the locators, which is usefull when the performer needs much intro
- When you have selected several Tracks, you cann select **Add Group/FX/VCA Channel to Selected Channels** from the context menu in the mixer or Add Channel > Group/FX/VCA to Selected Channels from the context menu in the track list
- If you need to rehearse a (partial) mixdown inside the Project, you can use Audio > **Bounce Selection**. Thus the mixdown is automatically added to the pool.
- In order to manage recordings from separate sessions, you can create separate record folders via Media > Set Pool Record Folder. Then it is clear, what was recorded in which session.
- Use libraries for snippets, loops, clips etc. that you use in more than one Project for easy access. To create one, go to File > New **Library**. Here, you can also save and open libs.
- Super nice short-cuts:
  - F6: automation-panel
  - Q: Automatically adjusts the selected midi part
  - J: De-/activate snap
  - L: Locator jumps to the beginning of the selected part
- alt-click to draw several automation events. Also the line tool holds several nice shapes you can apply instead of drawing them like an idiot
- Get the tempo from a recorded audio or MIDI via Project > **Tempo Detection**
- Edit > Render in Place > Render Settings may help you improve your CPU load.
- Alt+K: onscreen keyboard
- Ctrl+Shift+D/N/H/G: Duplicate/New/Next/Previous Track Version

Key Commands & Macros Edit > Key Commands. Everything else is pretty straightforward.

Assigning a command to a function that already has one, does not replace the previous command.

Enable Show Macros to assign commands or create new ones. The macros are also available at Edit > Macros.

It is possible to export and import key command settings, which is useful, if you switch your workstation.

Remote Controlling Cubase. You can connect a MIDI device via MIDI or usb. In order to not influence ongoing MIDI recordings, you should remove the controller from All MIDI: Studio > Studio Setup > MIDI Port Setup and deactivate "In 'All MIDI Inputs'". Here you can also find compatible devices when clicking the + to add a new device. If it isn't supported, simply use the generic and you can configure it yourself. The Relative flag needs to be set, if the controller is infinte (like some wheel). There also is a learn mode. You can set key commands for remote controllers.

Workspaces & Profiles Saves window layouts and some configuration. To add a new one, go to Workspaces > Add Workspace and give it a name. This saves your current configuration as workspace. In the Organizer (at Workspaces > Organize), you can see the respective key commands. You can also save the appearence of:

- Transport panel
- Status line
- Info line
- Toolbars
- Inspector

In profiles, you can save:

- Preferences
- Toolbar settings
- Global workspaces
- Track control settings
- Basically any kind of preset (except Control Room presets, track presets and plug-in presets)
- Key commands

So creating a profile of your setup is more convenient than applying all the steps in the Custom Setup. It also makes sense when more than one person with different preferences are working on the same computer. Profiles however don't contain Audio Connections or Project Templates. Profiles can be managed in Edit > Profile Manager.

All those preference files are stored in AppData/Roaming/Steinberg/programname

1.16.1 Lanes

- When activating solo of a lane, it simply mutes all the other lanes, so it can be heard in the project's context. Only one lane at a time can be solo.
- After having comped together a nice take, right click and Clean Up Lanes in order to remove empty ones

- Create suitable crossfades for overlaps and then Audio > Advanced > Delete Overlaps. Finally Audio > Bounce Selection (or MIDI > Bounce MIDI) to create a continuous event from the selected takes
- Comping Tool:
  - Works on all Lanes simultaneously (e.g. for cutting begin, end or breaks in the middle)
  - Click = Bring Take to front
  - Shift + Click = Select
  - Click + Drag = Creates new range for all takes and brings the one to front, on which the operation is performed
  - Strg + Alt + Move = Adjust timing of selected takes

1.16.2 Track Versions

Every track that can have track versions has a dropdown menu at its name. Most of the options are applied to all selected tracks.

Some usefull things:

- Project > Track Versions > Select Tracks with Same Version ID.
- Project > Track Versons > Assign Common Version ID. The active version of the selected tracks get a common ID.
- Project > Track Versions > Duplicate Version: Creates new versions with the same contents as the active ones for all selected tracks
- Project > Track Versions > Rename Version works for all selected tracks
- Copy pasting between versions is possible by using the object selection or range tool and ctrl + c/v

1.16.3 Jamming

- Use a chord track. It also can transpose notes in other tracks so they fit to the chord

1.16.4 Logical Editor

Open via MIDI > Logical Editor.

Super mighty, like a small MIDI programming tool inside Cubase. There are some useful presets, too (which could be used as a good starting point).

Upper half of the editor contains the conditions, lower half contains the orders to be executed.

Conditions can be created by drag&dropping MIDI events.

All the stuff you program can be put into macros and keycommands.

It is usefull to know, how MIDI events are structured. A table can be found at p. 994

1.16.5 Project Logical Editor

Open via Project > Project Logical Editor. Shitload of presets. Pretty much the same as the logical editor, but bigger. E.g. you can search for media types. You can adjust length of audio events, changing whole tempo tracks, delete ALL panning automation, select stuff, bring all volumes down, change track names simultaneously, trigger macros, insert or delete stuff. And

1.16.6 Shortcuts

- Navigation
  - numpad 1 / 2: Left / right **locator position**
  - shift + number n: jump to **marker** n
- Editing
  - strg + d: Copies the selected part(s)
- Replay & Loop
  - Select a part and press p, so the locators snap to the selection. Double-clicking a cycle marker does the same.
  - ctrl/alt + click on ruler: Set left/right **locator**
  - alt + shift + click in Project window: Sets the **cursor**

2 VST Plug-ins

Setting things up is possible in Studio > VST Plug-in Manager. Here you can also create collections for specific purposes (the + in the top right corner). Rescan is also possible, if you have just installed new plug-ins. The gear in the bottom left corner allows you managing plug-in paths.

For vst3 plug-ins, quick controls can be set directly from the plug-in through the context menu. There also is a nice Learn mode in the respective inspector tab. Just activate it, click on the QC you want to set and move the respective controller. The controller may also belong to a different track.

2.1 Instruments

In the overview, the context menu allows you to copy/paste settings and other stuff like loading and saving instrument/track presets. The displayed quick controls can also be connected to remote controllers in Studio > Studio Setup > VST Quick Controls. Just set the MIDI input, click Apply and check Learn. Then select on Control in the Control Name column and move the respective controller on your device. This remote controller setup is saved globally!

Instruments with side-chain can receive audio to

- use the instrument as an effect plug-in
- use the audio as modulation source
- aplly ducking to the instrument

If too much CPU power is consumed, you can either freeze instruments (including insert effects) or suspend processing when no signals are received.

On p. 240 of the Plug in Reference are functional diagrams for Mystic, Retrologue and Spector.

2.1.1 Groove Agent SE

2.1.2 HALion Sonic SE

2.1.3 LoopMash

Intended for slicing and reassembling rhythmic audio material. Effects can be applied to single slices (context menu). You can create scenes (displayed in the form of pads at the bottom), store them and trigger them with external Pad devices (like Akai MPK mini). Material can simply be dragged in from

the Project window or the MediaBay (the material is sliced in eights) - and dragged out to the sample pads of Groove Agent SE.

The actively selected track is the master loop. It governs the output's rhythmic pattern. With the *similarity gain sliders* to the left you state which tracks are how important. Effectively, this determines how many slices are played back from the respective track. The brighter a slice appears, the more similar it is to the current master track slice. Above the transport controls, you also have in the *Slice Selection* parameters that influence which slices are being played back. For example you can choose the similarity to be determined only by *Harmonic* - or by *Standard*, which considers rhythm, tempo, spectrum, etc. It is also possible to play up to four voices for the same slice or to limit the number of slices that can be chosen from the same track. The *Audio Parameters* - also on top of the transport controls - provide further options. You can align the audio to the grid, define timestretching, introduce some kind of staccato or apply envelopes and EQ to the material. Last but not least, the *Performance Controls* on top of the transport pannels allow you to apply effects to the overall performance during playback. The button's tooltips tell you, what they do. They can not be saved with the scene.

To the right side, you can control transposition and gain for each track. The transposition is tied to the Slice Timestretch parameter. If it is active, you get true pitch shifting. If it isn't, the transposition is achieved through adjustment of the playback speed.

LoopMash always tries to create a loop acoustically similar to the master loop, but using other sounds.

In order to create a composite track, just drag the slices you want to an empty track (inside LoopMash).

MIDI input is mapped to the controls as follows:

- C0 to B1: Scene pads at the bottom
- C2: Start
- D2: Stop
- E2: Sync on
- F2: Sync off

2.1.4 Mystic

Based on three parallel comb filters with feedback. The filter's feedback loop contains a variable low-pass filter. The *Feedback* level can be set to negative values to produce more hollow sounds, pitched an octave lower. *Detune* is applied to the comb-filters and can create chorus-like effects.

The upper half in the top panel is the Impulse Control Section. You can draw by hand in the spectrum displays. If you don't hold down shift while drawing, the other spectrum display gets the inverse shape. The chosen waveform is filtered through spectrum A. *Cut* works like a cutoff. *Morph* adjusts the mix between waveform A and B. *Raster* removes harmonics from the impulse.

The Comb Filter Sound Parameters are right below the Impulse Control Section. The *Damping* affects higher frequencies harder when it is low. The *Level* is modulated by Envelope 2. *Crackle*? It's noise. *Key Tracking* affects the comb filters' frequencies according to the played note. *Portamento* lets the pitches glide betwen the notes. Note that Legato only works on monophonic parts.

Keep in mind that the *Volume* is by default controlled by Envelope 1.

The *LFO* in the lower section grants you control over two identical low frequency oscillators and you can set their modulation destination (*Mod Dest*) as you wish. The *dest*-value determines, how strong the modulation is applied. It can also be negative. Thus you can practically modulate everything in your sound. Velocity destinations (*Vel Dest*) are modulated according to how hard the key is stroked. There are different sync modes. In *Part*, the cycle just runs independent of what you play. In *MIDI* it is synced to the MIDI clock. *Voice* gives every voice its own free running cycle. *Key* starts a new cycle for every key-down event.

The *ENV* in the lower section grants you control over four envelopes. Just as the LFOs, every envelope can have its own *Mod Dest*. As mentioned above, Envelope 1 and 2 control *Volume* and *Level* by default. But you can put an envelope around practically everything. Keep in mind that at least one envelope needs to be mapped to the Volume. Otherwise, there will be no sound. *Punch* delays the decay a bit, creating more *Punch*. *Retrigger* applies the envelope each time a new note is played. But this can engender clicking noises for certain sounds.

The *Event* in the lower section grants you control over MIDI controller stuff. It contains the most common MIDI controllers and lets you assign them just like the *LFO* and the envelopes. *key pitch tracking* can changes parameter values linearly according to where on the keyboard you are playing.

The *EFX* in the lower section grants you control over Distortion, Delay and Modulation. Those efffects are pretty straightforward. To the right, you can set the sample rate to *F*ull, half and quarter. Lower rates reduce the high frequencies and the audio quality. So it could be useful to imitate lo-fi sounds of older synths.

2.1.5 Padshop 2

Seems to be nice for atmospheric stuff, so actually pads. But hard synths also seem possible. And maybe it makes more sense to use this than the sampler track

- Drag and drop samples
- Many posibilitiers to shape the sample, put envelopes etc.

2.1.6 Retrologue 2

You wanted an analog synth. Here it is. On the left, there are three oscillators, one sub oscillator and a noise generator. Of course there also is a *side-chain* function. If you have side-chain input, you the (invisible) *Input* knob in the *Oscillator Mix* section gets activated, letting you choose how much comes in. Not to mention the modulation matrix, the 6 insert effects or the integrated arpeggiator/step sequencer. Those functionalities are separeted into three pages, which can be selected at the top.

There are several submodules in Retrologue, which can store presets on their own.

Synth page. There's some overall stuff in the voice section, like Mono/Stereo, gliding etc. *RETR* means that a stolen note is retriggered when you release the newer note. *FING* allows legato only for notes that are actually played legato without a break inbetween them. *Voice Mode* sets the priority, which notes get played back if more than one is pressed. *Trigger Mode* determines what happens when a new note is played. *Resume* retriggers the envelope, *Legato* doesn't.

In the top right *Main* section, you can set things like *Pitch*, *Key Follow* (meaning the pitch modulation follows the key), *Pitchbend* intensity, *Tune* and *Volume*.

Now the oscillators. Let's start with the main oscillators. For each, you can set a type:

- Single: Single waveform, where *Shape* controls the pulsewidth
- Sync: Produces a master and slave oscillator, where slave is reset with each full wave cycle of the master. *Shape* controls the slave's pitch
- Cross: Provides a slave and master oscillator, where master controls slave's pitch. *Shape* controls the pitch ratio between both
- XOR: Two squares are compared and depending on the outcome, the waveform of the third oscillator is reset. *Shape* controls the pitch ratio of the square signals
- Multi: Can set up to 8 oscillators. You can also set like 2.5 oscillators, which means that you get two full oscillators and one with reduced volume. *Shape* controls the pulsewidth of square signals

With *Phase* (or *Fix* for the sub oscillator) you can determine, how the waveform starts, when a note is played. Free phase let's the oscillator run freely, fixed phase allows you to set it yourself. If you activate *Fix* for the sub, it always starts at phase 0 when played.

There is also a ring modulator. It's a bit hidden at the bottom of the Oscillator Mix. It multiplies the signals from two sources, which you can choose at the very bottom.

Don't like the tone color yet? Let's go to the *Filter* section. You can choose between lowpasses, bandpasses and highpasses. Or combinations of them. Nice, right? The *Cutoff* defines the border frequency. *Resonance* influences the emphasize of frequencies around the cutoff, which can result in an inconveniently ringing tone. You have nices *Distortion* possibilities: Tube, Clip (Transistor-like), Bit Red (quantization noise), Rate (distortion through aliasing), Rate KF (same with key follow). *Envelope* adjusts the cutoff modulation of the filter envelope. *Key Follow* here adjusts the cutoff modulation, where the *Center* parameter determines the central position. If you set *Key Follow* to negative values, the cutoff is lowered with notes above the center key, and vice versa. The controls at the bottom are rather self-explaning. The *Velocity* level determines, how much the envelope intensity depends on the key velocity. If it is 0, the envelope is always fully applied.

Now to the *Modulators*. You have monophonic ones (*LFO1* and *LFO2*), which are calculated once to feed all voices, and polyphonic ones (*LFO3* and *LFO4*), which are calculated individually for each voice. The *Shape* knob changes the Waveform, depending on which *Waveform* you have chosen. The both *S & H* give you random step. You should activate *Shape* here, if you want a smooth random signal. You can synchronize everything to the DAW beat. Nice. *Env3* is an additional bipolar envelope (all the other envelopes are unipolar), which could be nice for panning and pitch stuff.

Super awesome feature: Setting up modulation via drag and drop! With *Bus 1-16* in the *Matrix* you can reuse modulations as sources and be combined to more complex signals. The *Modifier* is used to scale the modulation *Source*, e.g. in order to control the intensity of the modulation.

Arp page. (First of all, you can lock it with the small padlock, so it stays the same even when you switch presets) Okay, several modes. *Step* is monophonic, *Chord* plays, well, chords, *Up* and *Down* arpeggiates the notes in the selected order. For recordings, it might in most cases make sense to set *Trigger Mode* to *Next Beat* or *Next Measure*. If you activate *Hold*, the arp plays on even when you release the keys. *Wrap* restarts the arp after a specified number of steps. *Key Replace* specifies, how missing keys are replaced. Rest does not replace missing notes and inserts a rest instead, arp does some magic and the others are self-explaning.

In the *Steps* section you can choose between several rhythmic patterns (*Phrases*) for the arp and also modify them. You can do some shenanigans with legato and pitch changes. The arrows to the right allow you to shift the rhythmical pattern as a whole. You can also reverse and duplicate it with the other two buttons. The *Key* button gives you access to the key select row, where you can choose which key in the notebuffer should get played. P (Phrase) plays the respective phrase note if you put the selected mode (Up, down, ...) over it, while A plays all notes as a chord. The numbers play the note according two the Mode (if you have selected Down and pressed three notes, 3 will play the lowest). L plays the last note according to the selected mode.

In the Vel section, you set the velocity of the steps (shift+drag adjusts them all, alt+drag draws a ramp, shift+alt+drag draws symmetric ramps, drag the right border of a step to apply a gate - +shift for all steps), but also adjust the pattern length with the small handle on top. The *Ctrl* sections allow you to set up MIDI controller sequences, which are mapped to the MIDI controller lanes 110, 111 and 112, which are then sent to the modulation destinations. This means, that you can change the controller lanes on the actual MIDI track with this, so be careful. They can also be chosen in the modulation matrix on the Sequencer page (Arpeggiator → Controller). The controllers can be bipolar.

In the *Tempo* section to the left, you can *Sync* your phrase to the set tempo and allow it to play in a *Loop*. If that's too boring, you can drag & drop a MIDI file to set a nice groove.

Below this, you see the *Performance* section. *Swing* shifts the heven-numbered beats slightly. *Gate* and *Vel Scale* are additional gate/vel controls that are applied to the steps. *Octaves* can extend the

range. For example if you set it to +1, the phrase is played in the original tune and then again one octave higher.

FX page. It's all there: a resonator, a phaser, modulation effects, a delay, areverb and an equalizer. The chain on top can be adjusted via drag & drop. You can de-/activate th effects by clicking. If you activate one, it's respective section gets activated below.

- Resonator
  - Allows to introduce formants by using three parallel filters (e.g. to imitate the behaviour of human voices)
  - Also has LFOs (LFO tab), which can be used to modulate each filter (for extra motion in the sound). The used LFO can be selected in the drop-down menus in the middle
  - Can additionally be modulated by an Arp modulation source
  - The *Spread* value on the LFO tab changes the LFOs phase differently on left and right channel
- Phaser and Modulation
  - They share a section
  - *Shift* the phase modulation to higher frequencies
  - *Phase* widens the effect from mono to sterio
  - Modulation
    - Type can be set to Chorus, Flanger or Ensemble
    - Ensemble also has *Shimmer*, which sets the intensity of a secondary faster delay time modulation, which's rate can be set in relation to the primary delay
- Delay
  - Can be Stereo (two independend delay lines), Cross (two delay lines with cross feedback) and Ping-Pong (hard left-right bouncing)
  - *Delay L/R* shortens the delay time of the left/right channel, when swivelled to the left/right
  - *High Freq* attenuates high frequencies of the effect
- Reverb
  -

2.1.7 Spector

As with Mystic you can simply draw the spectrum filter contour in the display or choose presets. The signal path is as follows:

- Signal generation by up to 6 oscillators. They can be set with the little downwards-arrow below the rectangular display in the mid. *Coarse*, *Fine*, *Detune* and *Raster* are applied to all oscillators. The latter reduces the harmonics. *Portamento* is a kind of legato.
- Each oscillator produces the two waveforms A and B, which can be set independently.
- The signals pass through the spectrum filters A and B. The spectrum filters' frequency ranges can be adjusted with *Cut 1 & 2*. The can be connected with the *link* button inbetween them.
- The filters' outputs are mixed according to the *Morph* knob (which can be controlled by envelopes, LFOs etc.).

The lower section is pretty similar to that of Mystic.

2.2 Effects

2.2.1 Ambisonics

VST AmbiConverter Can convert stuff for 3D mixes in virtual reality and stuff

2.2.2 Delay

ModMachine Combination of delay modulation[1] and filter modulation[2] and also has some distortion. It all looks like someone who's into control theory did it.

- Delay section
  - Nudge: Speeds up the incoming audio momentarily, simulating analog tape machines
  - Width: Amount of delay modulation, can reach from vibrato-like to chorus-like
- Filter section
  - Display of signal path in Filter Position and filtertype (low-, high-, bandpass)
  - Frequency: In manual mode, the frequency is the cutoff. In LFO mode, it is the modulation rate
  - The Q-Factor is more or less responsible for the filter's resonance. In manual mode, you can set a percentage.

MonoDelay Pretty simple, with high and low filter and everything you would expect from a delay. Also works with side-chain. If the side-chain input exceeds the threshold, the delay repeats are silenced.

MultiTap Delay

- The dropdown in the top right corner gives you more options in the top section
  - Saturation determines, how much the saturation is increased with each repeat
  - Setting a character
  - Wobbling
  - Simulating a low quality delay by setting down the sample rate (low sample rates reduce the high frequency content)
  - Damping, Low cut, high cut
- Main Section: Typical delay parameters and up to 8 taps
  - By just double clicking in the window and drag and drop them (left right for time; up down for volume)
  - Grid size can be set easily via drop down
  - Tap rhythm: Activate it and then tap with the mouse where you want a tap while it plays
  - In the panorama section, the taps' panning can be adjusted
  - In the tap parameters section, their effect parameters can be adjusted (as well as in the tap effects section on the bottom) individually
  - Top right knob can link the tabs, so you can move them all together

[1] What is delay modulation?
[2] What is filter modulation?

  - The randomizer gives you some options concerning max- and min number of taps, timing, panning and level range.
  - Ducker: Good for vox → adjust it such that delay only takes effect when the singer is not singing. High input → duck delay. It can also be controlled via side-chain input.
    * FB: Suppresses feedback when ducking
    * DL: Erase delay line completely when ducking starts

- In the bottom section: Can set up to six effects for the delay
  - Loop effects feed the output signal back into the delay input
  - Tap effects are applied to each delay tap. Can even be set for single taps and the tap-specific parameters can be linked.
  - Post effects are not fed back.

- Fourteen effect modules exist:
  - Chorus (Doubles input signal with slightly detuned version), Flanger, Phaser, Vibrato (Pitch Modulation)
  - Envelope Filter (e.g. for auto-wah and can be LP, HP, BP or Notch), Filter (actually filter modulation with LFO)
  - Bit Crusher (noisy distortion), Overdrive (tube-like)
  - Pitch Shifter, Frequency Shifter (can alter harmonic relations)
  - Delay (somewhat funny), Reverb (rather room ambience oriented)
  - AutoPan (modulates left/right sterio position)
  - Gate (welp it a gate brah)

PingPongDelay See it rather as a creative tool. Works on stereo tracks, it does. If side-chain input exceeds the threshold, the delay repeats are silenced.

StereoDelay Works on stereo tracks, doesn't it? More or less two delays, one for left, one for right. If side-chain input exceeds the threshold, the delay repeats are silenced.

2.2.3 Distortion

AmpSimulator Simulates an amp, duh.

BitCrusher Lo-fi, noise, distortion. It's all there.

DaTube Warm lush tube ampillifylyer yür. Overdrive possible, Distortion rather not.

Distortion Usually sounds rather clinical. Activate the oversampling to avoid artifacts when using high distortion.

Distroyer Can be used for some nice sound shaping stuff. Make voices crispier, tracks brighter, drums bouncier. Can do stuff forom smooth overdrive to extreme clipping. The frequency filter is applied before distortion is added. Oversampling can reduce artifacts.

Grungelizer Add some noise, add some statics, add some crackle

Magneto II Simulates analog tape machines. The frequency range sets the spectrum band to which the tape effect is appllied. Solo lets you hear *only* the frequency range. HF-Adjust sets the amount of high frequency content in the saturated signal.

Quadrafuzz v2 Kind of a multiband distortion with delay. Could be cool for sound-shaping. Originally intended for drums, but also not bad on vox. Has 5 distortion models (Tape, Tube, Dist, Amp and Dec) and can distort up to 4 adjustable frequency bands in parallel. The delay has a ducker, which probably also can take sidechain input (but I'm not sure 'bout this). Activating the mode button loops the distorted signal back into the plug in, so distortion sums up with each delay repetition. The SB button lets you switch between multi- and single band mode. The scene buttons are quickly accessable settings, which you can store there.

SoftClipper Second and Third are harmonics you can add to enrich the sound. Recommended for lead vocals to add some crunch or to dirty up acoustic guitars and brass.

VST Amp Rack Intented for guitars. If you hide the big menu, you can use the smart controls. The tooltips should be sufficient to understand them.

- Pre/Post-Effects: Up to six effects from a small variety of typical guitar effects. Some of them can be synchronized to the track tempo (e.g. Phaser). Effects can be removed by selecting theiir name and selecting None.
- Amplifiers:
  - Plexi (Lead): transparent, classic british rock
  - Diamond: hard rock/metal from the 90s
  - Blackface: Clean american tone
  - Tweed: Originally a bass amp, clean and crunchy
  - Deluxe: Crunchy small amp with big tone
  - British Custom: 60s, clean or harmonic distortion
- Cabinets: They correspond to the amps, but you can of course select different ones
- Microphones: Select between condenser and dynamic. Place them somewhere around the cabinet.
- Configuration: Change the order of the signal chain. You can also decide, if the signal chain should be stereo or mono. In some cases it might be reasonable to use a stereo channel for guitars.
- Master: Only do fine-tuning here. The rectangle to the left tells the ideal incoming level range.

VST Bass Amp Most of it is the same as the VST Amp Rack, so I will only mention the differences here.

- The effects are more suited for basses, like a more versatile compressor and a limiter.
- Amplifiers:
  - ValveAmp300: 70s Rock
  - Greyhound: Growing
  - GreenT: 80s funk/rock
  - Paradise: 90s clear hifi

  - Tweed: 50s vintage, characterful and bright (should be the same as for VST Amp Rack)
  - iTech: Modern amp with universal sound.

- Cabinets:
  - 4x10: Clear and punchy, nice for Slap bass
  - 8x10: Double the amount of 10" speakers
  - 4x12: Mellow and full sound
  - 1x15: More low frequencioes. Nice for rock or vintage oriented styles.

- Microphones:
  - 57: Dynamic cardioid char
  - 121 Ribbon 8 char
  - 409: Dynamic supercardioid char
  - 421: Dynamic cardioid char
  - 545: Dynamic cardioid with minimal feedback (what ever that means)
  - 5: Dynamic cardioid
  - 30: Omnidirectional, for reference and measurement (so probably a clean and neutral frequency response)
  - 87: Condenser omnidirectional

2.2.4 Dynamics

Brickwall Limiter Creates a latency of 1 ms, so you better turn it off while recording. It also should always be positioned *before* dithering. *Detect Intersample Clipping* should also always be activated.

If the link button is deactivated, all channels are separated separately. Else, the channel with the highest level is considered.

Compressor It is a compressor. Lel. It's useful to know that in the analysis, *RMS* means that the average power of the audio signal is considered (nice for tracks with few transients), while *Peak* rather operates on - well - peak levels (nice for percussive material). The *Live* Button deactivates the look-ahead function, which takes latency to zero.

DeEsser Primarily for vocal recordings. You can *Solo* the selected frequency band in order to find an appropriate position and width. The *Diff* lets you hear the signal, that is removed from the input. The DeEsser should be positioned between pre-amp and compression. I have no idea, what the sidechain function is good for.

Shift + drag makes the frequency band wider/narrower.

EnvelopeShaper For shaping attack and release phases. Looks rather boring, but might be fun with side-chain.

Expander Enhances the dynamics of a track. Stuff below the threshold gets compressed, stuff above stays the same. *Fall* determines the reaction time. When using side-chaining, the expansion is triggered as soon as the signal exceeds the threshold. It could be used to reduce the level of other instruments, when kick and snare are hitting.

Gate The *Range* lets you control, how far the gate shuts. Select $-\infty$ to shut completely, when the signal is below the threshold. The side-chain works the same as that of the Expander, but a frequency filter can be applied to the side signal.

Limiter It is just a limiter.

Maximizer It makes stuff louder without clipping. So I guess it basically works like a compressor with an input gain.

MIDI Gate A gate that is triggered by MIDI notes.

MultibandCompressor Seems pretty powerful. You can set up the frequencies, set their volumes, define the compression, put specific bands to solo to hear what is going on there. A side-chain can be adjusted for the specific frequency bands.

MultibandEnvelopeShaper Now this might produce some fancy sounds.

MultibandExpander "Anti-Compression" to give more dynamics in several bands. Also has a side chain at the bottom, similar to the MultibandCompressor.

Tube Compressor Smooth warm compression. The internal side-chain lets you filter the trigger signal. *Drive* controls the tube saturation, *Input* determines the compression amount. The *Character* keeps the bass tight by preserving the attacks in low frequencies. It also adds brilliant harmonics for higher frequencies. The meter in the middle shows the amount of applied gain reduction.

VintageCompressor No threshold, nice level meters. Could be good for drums when using the *Punch* mode. You can mix dry/wet in the compressor, which is cool. Can also be used in the channel strip.

VSTDynamics Combines Gate, Compressor and Limiter. The Gate's position can be choosen at will.

2.2.5 EQ

CurveEQ Actually manufactured by Voxengo. It has a spectral matching functionality, which can transfer the spectral shape of one recording to that of another. This might be interesting for mastering and mixing, if you have a nice example of what your track should sound like.

DJ-EQ Simple 3-band: Low-mid-high.

Frequency Eight fully parametric bands. The settings allow you to adjust the spectrum display, e.g. how fast it reacts, if you rather want bars, if you want to display left/right channel separated and so on. If you activate the *Auto Listen for Filters* button on the top right, you will here only a specific frequency band, as soon as you touch one of its knobs.

For each band, you can switch between left/right, stereo and mid/side mode.

Choosing linear phase avoids unwanted frequency dependent phase shifts, which might happen with minimum phase, but it increases the latency (may be this info should better go to a special good-to-know-for-audio cheatsheet).

GEQ-10/GEQ-30 Graphic EQ with 10/30 bands. Presets for sound color exist. The EQ can operate in different modes:

- True Response: Serial filters with accurate frequency response
- Digital Standard: Last band's resonance depends on the sample rate
- Classic: Parallel filter structure, not accurate
- VariableQ: Parallel filtering where resonance depends on the gain
- ConstQ asym: Parallel filter, resonance is raised with gain
- ConstQ sym: Parallel filter, resonance of first and last band depend on sample rate
- Resonant: Serial filter, gain increase in one band lowers the gain in adjacent bands

StudioEQ Parametric 4-band stereo EQ. Only low and high bands can act as (several) shelves or cuts. It is possible to display the spectrum before and after filtering.

2.2.6 Filter

DualFilter Filters out specific frequencies. Setting position to negative values make it act as low-pass, positive values as high-pass.

MorphFilter Mixing up low-/high-/band-pass and band-reduction filter effects. You have filter A (low- or band-pass) and filter B (high-pass or band-rejection).

PostFilter. Filtering out unwanted frequencies. Combination of high- and low-cut and notch filter. The preview button allow you to only hear the desired band. The notch-buttons (1, 2, 4, 8) add additional notches to filter out harmonics.

StepFilter. Pattern-controlled multi-mode filter. It works in 16 steps and has a cutoff and a resonance component. The vertical axis represents the frequency. You can save up to 8 patterns (small knobs on the top left) for quick access. The hard clip parameter (only available in modern mode) adds more high frequency harmonics and distortion.

The StepFilter can be triggered via MIDI(-device). C0 increases the step-number successively. C1 to D#2 trigger the steps directly.

ToneBooster. Boosting frequency bands and adjusting the width. Can resemble a booster pedal for guitar sounds before going into an amp simulator. Recommended use: Before AmpSimulator.

WahWah. Yes, this can be controlled via side-chain (volume controls the pedal position). Low and High specify the min and max pedal positions.

2.2.7 Mastering

UV22HR. Adds dithering. Important when mixing towards lower quality. *Hi* applies normal dithering, *Lo* applies low dithering. *Auto Black* gates dithering during silent passages. Should always be applied post-fader.

2.2.8 Modulation

In general, if side-chaining is possible: If the side-chain signal exceeds the threshold, the modulation is controlled by the side-chain signal envelope.

AutoPan. Modulates the stereo position. You can also *Link* both channels and create a chopping-like effect. The RND1 button gives you a random curve. The RND2 button creates a new random curve after each period. The *Factor* is multiplicatively applied to the sync rate and allows you to create super slow panorama movements.

Chopper. Creates a kind of tremolo (*Mono*), that can also have a panning effect if you deactivate *Mono*. It then phase shifts both channels.

Chorus. Doubles the audio with a slight detune.

Cloner. Adds up to 4 detuned and delayed voices. The natural button changes the detune algorithm. You can also humanize it. This might be really cool for creating the illusion of choires.

Flanger. Feedback shapes the character. Higher feedback will sound more metallic.

Metalizer. Feedback knob makes metallic fun. Just as with the flanger, higher feedback produces a more metallic sound. But way more extreme in this case.

Phaser.

- Feedback: Defines the character
- Width: How much it moves between high and low frequencies
- Spatial: How much it moves between left and right
- LFO: Gives an automatic sweep between the existing frequencies

RingModulator. Bell-like enharmonic sounds. Somehow works by multiplying two signals. Sheesh.

Rotary. Simulates a rotating speaker. The rotation speed can be controlled with external midi controllers. You can control the intensity by toggling between slow and fast, when you set different slow and fast speeds and a nice acceleration. There are two speakers simulated, one for horn and one for bass. Great for creating authentic hammond impressions on organs, but also nice for gits. It also contains a soft overdrive. You can even manipulate the mic position in terms of phase and angle (0° is mono, 180° hard stereo).

Studio Chorus. Has two stages, that are processed serially. Can help simulating vintage pianos. Also nice for lead- and backing-vocals. I guess you could also just use to choruses in a row.

Tranceformer. Kind of a ring modulator. Creates extra harmonics. Considered as an experimental plug-in. You can also use only the harmonics component without modulation.

Tremolo. Nice for making Things sound vintage. Basically messes with the volume (i.e. modulates the amplitude).

Vibrato. Has some nice presets (like doubler). Basically messes with the frequency (i.e. modulates the pitch).

2.2.9 Network

VST Connect CUE Mix.

VST Connect SE.

2.2.10 Other

LoopMash FX. Rather for live performances, DJ effects and stuff. Also has stuff like scratches and tapestops. May be those can also be used offline, you have to find out. Since it can be controlled with MIDI input, you should be able to create a MIDI track that triggers the desired effects.

Randomizer. Actually only contained in Nuendo. But I guess all it can do can also be done with the Logical Editor.

2.2.11 Pitch Shift

Doppler. Doppler-Effect, of course. But only available in Nuendo.

Octaver. Generates the first and second octaves below the original signal. Can be usefull to extract low rumbles and still make an instrument sound full (first apply Octaver, then cut the low frequencies with an EQ).

Pitch Correct. Choosing External MIDI Scale as Scale source lets you use a MIDI track as source for the notes/scale. You can also work with Chord tracks, which could be nice in some cases. You should always turn on Preservation, to prevent Mickey Mouse effects and keep the character of the audio.

PitchDriver. Yes, exactly. Only for Nuendo. A rather artistic tool for extreme pitching stuff.

VoiceDesigner. Oh yes, you already guessed. Nuendo. Extreme pitch shifting and morphing. Robotic voices. Also has a side-chain.

2.2.12 Reverb

REVelation. Has different early reflection patterns to shape the room. The reverb time can be adjusted in 3 frequency bands separately. Also you can balance out Early Reflections and Tail with the *ER/Tail* fader.

Put the *Size* parameter at 100 % to make the room as natural as possible. Decrease it to make the room smaller.

The *Room Size* parameter on the other hand gives you a cathedral at 100 %. 50 % correspond to a medium-sized room.

Don't you ever put the *Main Time* to 100 %! The reverb will go on forever. And that's no exaggeration, buddy. Keep in mind, that the *Main Time* also represents the mid band of the reverb tail. The other two bands are controlled by *High Time* and *Low Time*. The three areas can be adjustet with *High/Low Freq*.

The reverbs attack is *Shape*d. 0 % for immediate (like for drums, e.g.).

In order to hear distinct single reflections, put *Density* to a low value.

If you already no, how dry or wet your signal will be, you can *Lock Mix Value* to keep it constant while browsing through the presets.

The reverb tail can be moodulated and hence enriched.

REVerence. Works by signal convolution (so a simple multiplication in frequency space) with the impulse response of recorded rooms. Hence this should be rather authentic. Attention! High RAM consumption! It is also possible to *Import* your own recorded impulse responses (with a max. of 10s). You can put several configurations in the *Program Slots*. They are all loaded into RAM, so that changes can be made immediately while replaying. You can even activate *Smooth Parameter Changes* to get small crossfades when switching programs.

At the bottom are the reverb settings. You can *Reverse*the impulse response or normalize the signal with *Auto Gain*. You can even set a split point between early reflections and the tail with *ER Tail Split*, to determine where the tail begins. On top of that, you can trim the impulse response in the Impulse Response Display.

And of course there also is an EQ for the reverb.

RoomWorks. The *Size* in refers to the room size. Higher diffusion creates a smoother sound. *Width* means the stereo width. If you hear odd ringing or something, try the *Variation* button. It uses your same settings, but alters theh reflection patterns. There are 1000 possible patterns. The *Hold* button freezes the reverb buffer in an infinite loop. This may be used for sound creation.

The envelope actually is a seprate envelope around the reverb itself.

The *efficiency* affects the used processing power. Low efficiency → High quality reverb. On the other hand, with efficiency over 90 % you might create some nice and creative effects.

RoomWorks SE. Actually a smaller RoomWorks. Also less CPU demanding.

2.2.13 Spatial + Panner

Anymix Pro. Nuendo only. Surround panner.

MixConvert V6. Converting between multi-channel mixes.

MonoToStereo. Well, it does what it says. It needs to be used on a stereo track. Seems to work nice on guitars, but sounds rather shitty on clean vox. But maybe suitable for backing vox.

Mono compabitility may be a problem. There is the *Mono* button to check on that.

Stereo Enhancer. The color button adds warmth on the left and brightness on the right. With a delay, it can kind of sound like a very broad reverb. Usually used as a mastering plugin.

Has of course no impact on mono-files.

Here you also have a *Mono*-Button to check for compatibility.

VST AmbiDecoder. Used for Conversion of Ambisonics audio for playback on headphones etc.

VST MultiPanner. Only available as a channel panner, not as an insert effects. Allows you to position a sound source in the surround field.

2.2.14 Surround

Bass Manager. Nuendo only.

Mix6to2/Mix8to2. Mix down surround mix formats to stereo. Usage is pretty straightforward. Mix8to2 is only available for Nuendo.

MixerDelay. Adjustments like mute, solo, phase inverse, delay (also in cm), level, and so on for each individual surround channel.

MatrixEncoder/MatrixDecoder. Nuendo only. Something with Pro Logic compatible encoding.

2.2.15 Tools

MultiScope. Inspecting the waveform (Ampl), phase linearity (Scope - only between channels) and frequency content (Freq) of a signal.

Short explanation on the scope: Vertical line is a perfect mono signal. Horizonal line means inverted phase. Random, roundish shape: well balanced. More spray-like: More high frequencies. More thread-like: More low frequencies.

SMPTEGenerator. Only sends out a timecode. Might be handy for synchronization stuff.

TestGenerator. Generates an audio signal. Curve forms are: Sine, triangle, square, sawooth. But also white, pink and brownian noise. The signal can also be recording. Just click the recording button.

Tuner. I made the experience, that this tuner is not good. I use GTune instead.

2.2.16 External Effects

You need to set up the respective FX busses (sends and returns) in the Audio Connections (F4).

2.3 MIDI Effects.

Can change or create new events or change properties like pitch. You can record the result to track by activating the respective button of the effect. When using a send effect, you can decide wether to apply it pre or post fader and inserts.

Arpache5. Arpeggiator. Gets a chord as input, outputs single notes according to your settings. *Step Size* determines the speed, *length* sets the note length relative to the project tempo. The *Key Range* is counted from the lowest played note. If notes are outside the range, they are transposed into the range octave-wise. If the range is bigger than one octave, the arpeggiator adds notes on top. If you activate *MIDI Thru*, the input-chord is also in the output, together with the arpeggiated notes.

All this also works live, when monitoring MIDI input. I wonder, if this also works with a Chord track.. Okay yes, it does. I checked. Nice.

Arpache SX. Probably the more advanced arpeggiator.

Okay, let's start withi Classic. The *One Shot Mode* makes sure, your phrase is only played once. If you don't activate this option, you get a loop. *Transpose* adds transposed repeats (!) of the basic phrase. How many? That's determined by *Repeats*. How hard are your repeats transposed? You defined it with *Pitch Shift*. Be careful - *Max. Polyphony* limits the size of the input chord. The remainder is either self-explanatory enough or just like in Arpache5.

So now, Sequence mode. This looks basically the same, but you can import a MIDI part (drag-drop works). The notes are either sorted according to their order or pitch (if you activate *MIDI Seq. sort by pitch*). If you now play a chord, Arpache SX takes the notes from your chord, but the pattern from the imported MIDI part. Basically that's it. Except that there is a ton of options, which allow you to drastically influence the replay order.

Auto LFO. Alows you to send out continuous MIDI controller messages, llike panning or waveform, wavelength and such stuff. *Density* determines the sent curve's smoothness.

Beat Designer. E.g. for creating drum patterns. Might be a nice alternativ to clicking all the midi-events by hand, when working on a draft song. You even can slightly offset the timing for a more natural flow. The interface is not that intuitive, but I guess you can get used to it.

The keyboard on the bottom is no keyboard. It's just a switch for the patterns. You have, on top, the four sub-banks, and on the bottom 12 patterns. Easy to switch.

If you add a note, be careful, where you click. Top of the field means louder. You can adjust the velocity by clicking and dragging up and down. Hold shift while doing so, and all steps on the same lane are also changed. Click alt to create a (de-)crescendo.

There are further operations. Shift+click: Drag lane right/left. Invert a lane: click alt and drag mouse over lane. Copy lane: Click alt, drag the left of the lane to the target. You can also add and remove lanes.

To the right are the swing options. You can set up two swings for each lane and then switch between them quickly by simply clicking. On the left are the flam options, adding secondary drum hits just before or after the actual beat. up to three flams can be added for each pattern step. Flams have to be added on the tiny squares at the bottom of the field-squares.

You can trigger the patterns with a MIDI keyboard (C1 to B4): Activate *Jump*

In the functions, you have the option to *Fill Loop with Pattern*. A MIDI part for the current part is created and inserted into the current loop in the Project window. But you also can just drag a pattern or sub-bank onto a MIDI track.

Chorder. Allows you to assign chords to single keys. The chords are entered by activating the *Learn* button at the top.

You can create Layers according to the playing velocity. E.g. if you have to layers, layer 1 may be triggered by vel. up to 64 and layer 2 by vel up to 128.

The replay of the chords can be adjusted. You can play them just as they are or with different arpeggiation.

Compressor. You know what a basic compressor does? No? Then learn about it.

Context Gate. Only lets pass specifig chords or notes. E.g. you can filter out chords with too much notes. Or you can filter according to velocity. The intention is rather to use it for live performances and put specific effects on specific notes, so you don't need an additional MIDI controller.

Density. Density below 100 % randomly mutes notes. Density above 100 % randomly adds notes (that were played before).

MIDI Control. Setting up and controlling eight MIDI controller types.

MIDI Echo. Kind of a digital delay, but also with pitch shifting. Not actually echoing audio.

MIDI Modifiers. A duplicate of the MIDI modifiers in the inspector. This way, you can add additional Random Settings for example. Addionally, there is a scale transpose, so incoming MIDI notes are mapped to the defined scale.

MIDI Monitor. Nice for analyizing, which events are generated by a MIDI track or device.

Micro Tuner. You can detune each key in an octave separately. Press alt while dragging to detune all keys simultaneously.

Note to CC. Maps keys to CC events, while the note velocity controls the CC value. Best used with monophonic tracks.

Quantizer. Performs quantizing in terms of timing in real-time.

StepDesigner. Does not work with the incoming notes, but outputs MIDI notes and controller data according to the defined pattern. The plug in is monophonic.

The slider to the top right is for swing. The pattern selector at the bottom can hold up to 200 patterns. On the bottom left, you have the controller pop-up menu, e.g. velocity. But basically, you can controll any CC, but only up to two at the same time.

If you set up StepDesigner as insert effect for a record enabled MIDI track, you can switch patterns with keys. C is for 1, C# for 2 and so on (up to 92). Those pattern changes can also be recorded.

Track Control. For control of devices which are GS or XG (extensions of the MIDI standard) compatible. Like The Roland GS and the Yamaha XG. I don't have such things and hence will skip this.

Transformer. Realtime version of the Logical Editor. The MIDI events on the track are not affected.

3 Looks like a bug, but isn't

- Tracks that can only be added once are: Arranger, Chord, Signature, Tempo, Transpose, Video
- When auditioning, the signal is directly rooted to the control room. So if it isn't set up properly, you can't hear a thing.

4 Library Manager

Standalone program that lets you manage your Steinberg installations. Can only be opened, when all other Steinberg products are closed.

You can move installed libraries to other locations (e.g. another hard drive, if you need more space).

5 Scores

Progress: p. 18/210 (in manual for cubase10 → when proceeding here, we need to check if everything is still correct and where we need to continue)

5.1 Basics

- Open score editor: Select parts → 'strg + r' for fullscreen. Alternatively you can choose 'Scores' as your editor in the lower portion of the project window
- Move project cursor: 'alt + shift + click'
- The left-side Editor Inispector has two modes if scores is opened in the bottom section

5.2 Display Quantize

Useful to display slightly off MIDI-notes in the way they should look like, without affecting the original recording. Tweaks are:

- Smallest note length
- Smallest rests (eleminates rests which are smaller than this value, except when they are *necessary*, e.g. at the beginning of a beat)
- If using different concepts (e.g. triols, quintols here and there), you should use the 'automatic dipslay quantize'

5.3 Export

- Printing
  - In the menu, choose 'Scores' → 'Page Mode'
  - Printing parts without trailing empty bars: Preferences > Scores > Editing > Unlock Layout When Editing Single Parts

6 Next important points

- Play around with effects/instruments and discover, what can be done with them
- Create some nice makros and key commands

7 VST Transit

Accessible via VST Cloud > VST Transit. This is intended for collaborative work. A bit like github for cubase projects. Since it is limited and expensive as fuck, I recommend finding other ways of collaborating, e.g. via Dropbox or TeamViewer.