

WHAT IT IS

A convolution reverb built from twenty-five measured places. Every room is a real impulse response from the OpenAIR library (Audiolab, University of York, CC BY 4.0): York Minster, St Paul's, the Hamilton Mausoleum, Maes Howe, Newgrange, a reactor hall, a railway tunnel, a mine. Two of the twenty-five are reconstructions and are flagged MODELLED. Zero latency: the convolution runs in its zero-latency partition mode and reports 0 samples to the host.



Rendered by the plugin itself, offscreen – the real interface, not photographed in a DAW.

INSTALL (MACOS, AU + VST3, UNIVERSAL)

1 Unzip. 2 Copy CAIRN.component to ~/Library/Audio/Plug-Ins/Components/ and CAIRN.vst3 to ~/Library/Audio/Plug-Ins/VST3/. 3 Rescan plug-ins in your host (Live 12: Preferences → Plug-Ins → Rescan).

First launch. CAIRN is not yet signed with an Apple developer certificate. If macOS says the developer cannot be verified: System Settings → Privacy & Security → Open Anyway, then rescan. Ableton on Apple silicon: if Live does not list CAIRN, check whether Live itself runs under Rosetta (Finder → Get Info) and rescan after changing it.

EVERYWHERE

Drag, mouse wheel, double-click for the default, Shift for fine. No keyboard shortcuts – the keyboard belongs to your DAW. The window snaps to 75 / 100 / 125 / 150 % by its corner. Two colour schemes (Cold Light, Amber) in the help panel (?), remembered between sessions. Every knob is host automation.

CAIRN • Controls

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CONTROL	WHAT IT DOES
ROOM	Click the name at the top: all 25 places, sorted by reverb time, with photo and measured curve. FELDNOTIZ (bottom) shows team, date, microphones, licence.
THE DIAL	Outer ring: the measured decay (0 to -60 dB over 270°) with your live tail in green and a green T30 mark. Drag along the arc = DECAY. Eight handles on the inner ring = EQ (radial = gain, around the ring = frequency). The flower is the spectrum of the wet signal. Double-click the centre: EQ and decay back to the room as measured.
DECAY	0.25× to 4× the measured room. Below 1× an envelope shortens the tail; above 1× the tail is slowed and extended from its own last half second — no resampling, no pitch shift.
DRY / WET	0 to 100 %. Rooms are level-matched: a sustained signal comes out as loud as it went in.
BLOOM	0 to 100 %. Eight slowly breathing allpasses on the wet signal — density in the first moment, movement in the tail. Lossless: the reverb time stays the measured one. 0 = exactly as recorded.
EQ 1–8	±12 dB, one octave wide, wet signal only. Default centres 63 Hz ... 8 kHz; drag sideways to move a band between 40 Hz and 12 kHz (snaps to its octave). Bands at 0 dB cost nothing.
RESONANCE	Amount and frequency (40–300 Hz) of a narrow boost at the room's own note (e.g. Maes Howe: 86 Hz, F2). The field shows the measured modes; the handle snaps to them.
PREDELAY	0 to 250 ms before the room.
STAGE	Drag around the listener for AZIMUTH (-180...180°; interaural delay, head shadow and a rear cue behind you), outward for SPACE (decorrelation and cross-feed — depth on headphones). Wheel = WIDTH.
HEIGHT • TILT	HEIGHT ±60°: the pinna notch moves from 4.8 to 10 kHz. TILT leans the orbit so the room rises on one side and sinks on the other.
SWING • ORBIT	ORBIT circles the room, one lap in 50...5 s. SWING narrows the path: full = lap, below = pendulum ±180°×swing around the azimuth.
DUCK	Up to 24 dB; the reverb steps back while you play. DUCK FROM: the input or the sidechain bus (the plugin's second input).
OUTPUT	-24 to +24 dB on the wet signal only.
FREEZE	Holds the tail as a cloud — eight delay lines, lossless mixing, soft limiter. No echo, no drift. New notes fall into the cloud.
MORPH • ROOM B	Blend into a second room, power-matched. Room B costs nothing while MORPH is 0.
JOURNEY	Off, or 120 to 4 s per room: MORPH swings 0→1→0 and the silent side takes the next room — by reverb time or catalogue order. Nothing jumps.
EARLY / LATE	-100 % keeps only the first 80 ms (the place), +100 % only the tail. Level re-matched.
DENSITY	-100 % grainy (bloom delays stretched 2.2×) to +100 % dense.

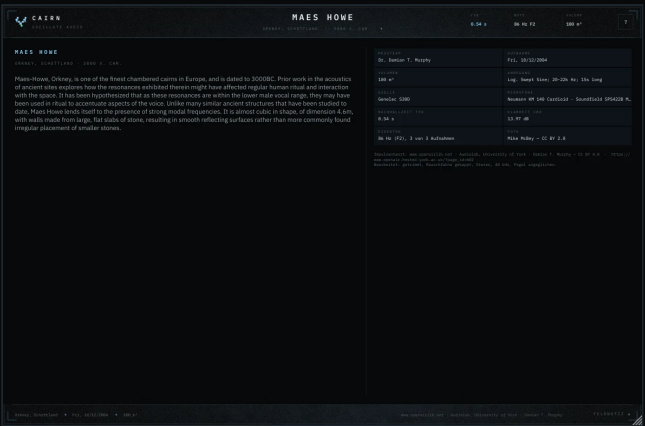
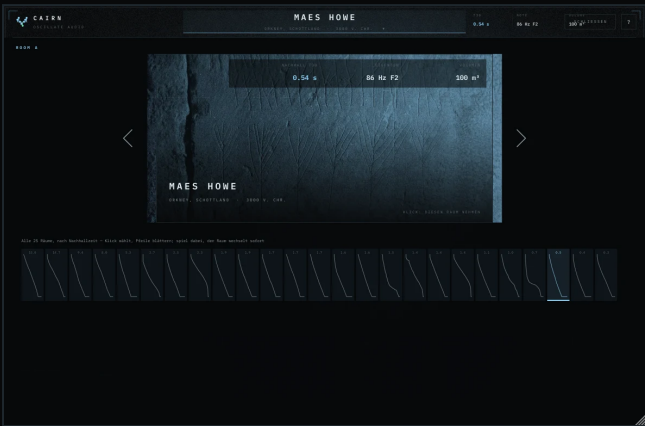
CAIRN • The rooms

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PLACE	WHERE	WHEN	T30	OWN NOTE
St Mary's Abbey	York, England	rekonstruiert	15.05 s	147 Hz D3
Hamilton Mausoleum	South Lanarkshire, Schottland	1842–1858	14.73 s	135 Hz C#3
St Paul's Cathedral	London, England	1675–1710	9.44 s	85 Hz F2
York Minster	York, England	13.–15. Jh.	7.98 s	150 Hz D3
R1 Reactor Hall	Stockholm, Schweden	1954	5.27 s	167 Hz E3
St George's Episcopal	Nashville, Tennessee, USA	nicht angegeben	2.69 s	74 Hz D2
St Albans Lady Chapel	St Albans, England	1327	2.50 s	200 Hz G3
Clifford's Tower	York, England	13. Jh.	2.35 s	152 Hz D#3
Bottle Dungeon	Fife, Schottland	15. Jh.	1.90 s	72 Hz D2
Tyndall Bruce Monument	Falkland, Schottland	1856	1.85 s	98 Hz G2
St Patrick's Patrington	East Yorkshire, England	14. Jh.	1.74 s	196 Hz G3
All Saints North Street	York, England	14. Jh.	1.74 s	65 Hz C2
Tvisongur	Seyðisfjörður, Island	2012	1.68 s	150 Hz D3
Innocent Railway Tunnel	Edinburgh, Schottland	1831	1.63 s	160 Hz D#3
Heslington Church	York, England	11. Jh.	1.60 s	184 Hz F#3
St Matthew's Walsall	Walsall, England	13. Jh.	1.47 s	157 Hz D#3
Creswell Crags	Derbyshire, England	Paläolithikum	1.38 s	125 Hz B2
St Andrew's Church	Lyddington, Rutland, England	mittelalterlich	1.37 s	125 Hz B2
Saint Lawrence Molenbeek	Molenbeek-Wersbeek, Belgien	nicht angegeben	1.37 s	129 Hz C3
Holy Trinity Goodramgate	York, England	13. Jh.	1.07 s	172 Hz F3
Hoffmann Lime Kiln	Langcliffe, England	1873	0.96 s	75 Hz D2
Gill Heads Mine	Yorkshire Dales, England	bis 1980er	0.71 s	63 Hz B1
Maes Howe	Orkney, Schottland	3000 v. Chr.	0.54 s	86 Hz F2
Troller's Gill	Yorkshire Dales, England	Karst	0.36 s	107 Hz A2
Newgrange	County Meath, Irland	3200 v. Chr.	0.25 s	–

All impulse responses: OpenAIR, Audiolab, University of York (Damian T. Murphy and colleagues), CC BY 4.0. Trimmed at onset, decoded from B-format to a virtual stereo pair, noise floor replaced by a per-band synthesised tail, level-matched. Every field note inside the plugin says exactly what was done.

CAIRN • Measured



Room chooser (all twenty-five with their measured curves) and a field note.

NUMBERS, NOT ADJECTIVES

Every figure below comes from the test program that ships with the source and runs the actual plugin offline at 48 kHz.

Latency	Direct sound 0.50 ms after the impulse (the room's own onset), 0 samples reported to the host.
Room accuracy	Card vs. convolved: Maes Howe 0.54 / 0.59 s, Hamilton Mausoleum 14.73 / 15.01 s, York Minster 7.98 / 8.01 s, Innocent Railway Tunnel 1.63 / 1.73 s.
Decay 2×	Maes Howe 0.54 → 1.75 s without resampling.
Bloom 100 %	Energy −0.72 dB against off, T30 0.57 → 0.54 s, crest factor of the first 50 ms 287 → 22.
Freeze	−41.1 dBFS after 1.5 s, −40.0 after 5 s; fluctuation 12.8 % — a cloud, not an echo.
Stage	Azimuth 90°: left channel 149 dB down. Azimuth 180°: energy above 3 kHz −3.6 dB, ears within 1 dB. Height −60° vs +60°: 4–6 kHz −5 dB, 9–11 kHz +2.5 dB. Tilt with orbit: −60° ... +60° per lap.
Level	Sustained noise at 100 % wet: 0.0 dB against the input.
Deck	Morph 100 % (A Maes Howe, B York Minster): T30 8.07 s. Early/Late −1: tail after 100 ms 4.8 → 0.0 %. Sidechain duck: 24 dB. Density grainy vs dense: crest 116 vs 62.
CPU	Not stated — not read off a host meter yet.
Windows	None yet.