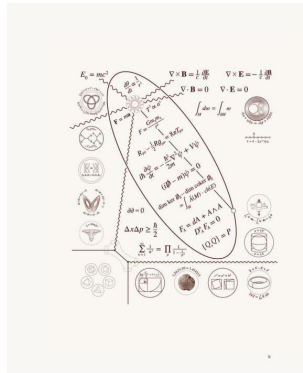


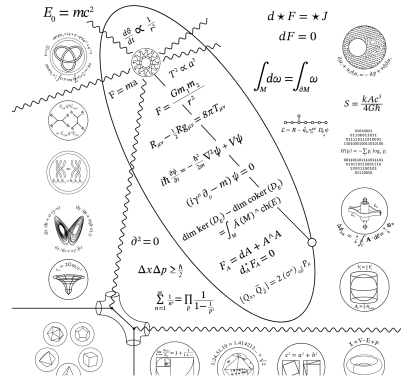
Iconic Wall Change Log

Original Simons Center wall reference → final Mister Consistency fabrication artwork

Revision 3 · July 28, 2026 — typeset edition · Rev. 2 (July 9, 2026) recast Maxwell in differential forms and added the Bekenstein–Hawking entropy



Original reference diagram (catalogue)



Final vector fabrication artwork (rev. 2)

Figure 1: Original catalogue wall diagram beside the revised 42 × 42 vector fabrication artwork (July 2026).

1 Executive summary

- The final Iconic Wall remains a faithful reconstruction of the original Simons Center wall: the central ellipse, peripheral medallions, background equations, and the wall's historical math–physics progression are all preserved.
- The dominant change is production-oriented: the stone-relief photographic reference was converted into monochrome, fabrication-ready vector line art for laser-etched or sandblasted steel panels (42 × 42 and 32 × 32 inch, plus a 10 × 10 inch legend plaque).
- Two entries join the background — Shannon's information theory (I) and the Bekenstein–Hawking entropy (J) — expanding the background key from A–H to A–J, and Maxwell's equations are recast in differential forms. All three are told below.
- The legend was rewritten for consistency and specificity: capitalization normalized, long entries shortened, credits tied to removed raster sources dropped, labels made precise. Several formulas were cleaned or clarified — most notably Dirac, Yang–Mills, supersymmetry, Archimedes, boundary-of-boundary notation, and the mass–energy label.

2 The three additions, in brief

B Maxwell's equations, recast. All of electricity, all of magnetism, and light itself, in two short lines: $dF = 0$ and $d\star F = \star J$. When Maxwell first captured these laws in the 1860s they filled twenty equations; vector calculus later compressed them to the famous four; the modern language of differential forms — the same d and $\star$ that appear elsewhere on this wall — folds them into two. Physics got deeper by getting shorter. The four vector-calculus equations of the original wall are honored, not discarded: they are the same physics, written in the wall's own geometric tongue.

I Shannon's information theory. In 1948 a Bell Labs engineer asked a question nobody thought was mathematics: how much surprise does a message carry? Claude Shannon's answer, $H(p) = -\sum_i p_i \log_2 p_i$, measures information in a brand-new unit he named the *bit* — and drew a hard ceiling on how far any message can be compressed and how fast any channel can carry it, forever, regardless of technology. The raw binary carved around the formula is the alphabet Shannon's theorem governs — two symbols, endlessly arranged, now carrying nearly all human communication.

J The Bekenstein–Hawking entropy. One line, four constants, four departments of physics: $S = kAc^3/4G\hbar$ carries Newton's G (gravity), Planck's $\hbar$ (quantum), Einstein's c (relativity), and Boltzmann's k (thermodynamics). No other equation makes all four shake hands. It says a black hole has entropy — hidden information — proportional to the *area* of its horizon, not the volume inside: everything a black hole swallows is somehow recorded on its surface. Physicists call the idea holography. The wall's newest stone, and its best candidate for the physics of the next century.

3 Major changes by category

Area	Original	Final	Change made
Overall wall	Carved/sculpted wall documentation and catalogue diagram.	Rebuilt as clean, square, fabrication-ready vector line art.	Major production change: from photographic/relief reference to flat black vector art.
Overall format	Original installation is tall: $279 \times 240 \times 2$ inches; the catalogue describes a $23 \text{ ft} \times 20 \text{ ft}$ wall.	Square 42×42 and 32×32 inch panels, plus a 10×10 inch legend plaque.	Scale and aspect ratio changed for steel-panel fabrication.
Color / material	Stone relief, shadows, tonal texture, catalogue teal headings.	Pure black line art; no gradients, raster images, or shadows.	All tonal and material cues removed for engraving clarity.
All medallions	Mix of diagram line work, relief, and several photo-based medallions.	All medallions redrawn as consistent vector strokes.	Unifies style; improves reproducibility at reduced sizes.
Central ellipse	Large diagonal ellipse with sun, planet path, and equations 1–10.	Retained; line weights, spacing, and surrounding formulas cleaned for the square layout.	Core composition preserved.
Photon lines	Sculptural relief-like wavy lines crossing the wall.	Converted to a high-contrast vector stroke pattern.	Fabrication readability.
Background equations	Four vector-calculus Maxwell equations; background items A–H.	Maxwell recast as $dF = 0$, $d\star F = \star J$; Shannon (I) and Bekenstein–Hawking (J) blocks added.	Notation modernized; two new background entries.
Legend system	Key uses I–XIII, 1–10, and background A–H.	Key uses I–XIII, 1–10, and background A–J.	The two additions required two new background key entries.

4 Legend changes: original → final

The final legend plaque is not a verbatim copy of the catalogue legend: it is a rewritten key for a new fabrication object. The numbering system remains; the wording is normalized and two background items are added.

Key	Original wording	Final wording	Change
Heading	Key to Equations and Diagrams	Key to equations and diagrams (I–XIII)	Lowercase style normalized; numbering range made explicit.
I	The Jones Polynomial	The Jones polynomial	Capitalization normalized.
II	Associativity in Quantum Field Theory	Associativity in quantum field theory	Capitalization normalized.
III	The Yang-Baxter Equation	The Yang–Baxter equation	Capitalization normalized; dash treatment standardized.
IV	The Lorenz Attractor (Image: Scott Sutherland)	The Lorenz attractor	Capitalization normalized; image credit removed because the final is redrawn line art.
V	The Schwarzschild Black Hole	The Schwarzschild black hole	Capitalization normalized; spelling verified.
VI	The Five Platonic Solids	The five Platonic solids	Capitalization normalized.
VII	The Golden Ratio	The golden ratio	Capitalization normalized.

Key	Original wording	Final wording	Change
VIII	The Babylonian tablet YBC 7289 (Image: Bill Casselman)	The Babylonian tablet YBC 7289	Raster-photo attribution removed; the final tablet is vector line art.
IX	The Pythagorean Theorem	The Pythagorean theorem	Capitalization normalized.
X	The Gauss-Bonnet Theorem	The Gauss–Bonnet theorem	Capitalization normalized; dash standardized.
XI	Archimedes’ calculation of the volume and area of the sphere	Archimedes’ sphere and cylinder	Long label shortened to the medalion’s visual subject.
XII	The Aharonov-Bohm Effect	The Aharonov–Bohm effect	Capitalization normalized; dash standardized.
XIII	The Navier-Stokes Equations (Image: J.D. Kim, AMS, Stony Brook)	The Navier–Stokes equations	Capitalization normalized; image credit removed (redrawn as line art).
Ellipse heading	In the Ellipse	Within the ellipse (1–10)	Heading made natural; numbering range explicit.
Ellipse note	(Kepler’s 1st law represented by star, ellipse, planet)	(Kepler’s 1st law represented by star, ellipse, planet)	Kept; surrounding legend typography cleaned.
2	Newton’s Second Law of Motion	Newton’s 2nd law of motion	Numeral style harmonized with Kepler’s 1st/2nd/3rd laws.
Background heading	On the Background	On the background (A–J)	Capitalization normalized; expanded from A–H to A–J.
A	$E=mc^2$	Einstein’s rest mass–energy equivalence	Formula-only label replaced with a descriptive title.
D	Supergravity	Minimal supergravity Lagrangian	Made specific to the displayed formula.
H	Feynman Diagrams	Feynman and string interaction “pair-of-pants”	Expanded to reflect the combined particle/string drawing.
I	<i>No original entry</i>	Shannon’s information theory	New background item added to the final artwork and legend.
J	<i>No original entry</i>	The Bekenstein–Hawking entropy formula	New background item added in the July 2026 revision.

5 Element-by-element changes

The following tables list every named item in the original key, the ten ellipse items, and every background item. “Retained” does not mean visually identical; in nearly every case the final version was redrawn or retypeset as consistent black vector art.

5.1 Peripheral diagrams and medallions (I–XIII)

Item	Original reference	Final version	Change type
I Jones polynomial	Trefoil knot with Jones polynomial / Chern–Simons expression.	Retained; redrawn as vector line art.	Redraw, typography.
II Associativity in QFT	Tree-level associativity diagram.	Retained; redrawn.	Redraw, typography.
III Yang–Baxter equation	Braiding equality diagram with R -matrix expression.	Retained; redrawn.	Redraw, typography.
IV Lorenz attractor	Butterfly image credited to Scott Sutherland.	Redrawn as vector attractor with surrounding equations; credit removed.	Photo to vector.
V Schwarzschild black hole	Embedding-diagram medallion.	Retained; redrawn with clean vector curves.	Redraw, spelling check.
VI Five Platonic solids	Five separate solid diagrams.	Retained; redrawn with consistent outlines.	Redraw.
VII Golden ratio	Golden rectangle/spiral with limit and continued fraction.	Retained; redrawn.	Redraw, typography.
VIII Babylonian tablet	Tablet photograph credited to Bill Casselman.	Simplified line-art tablet medallion; credit removed.	Photo to vector.
IX Pythagorean theorem	Wordless-proof diagrams.	Retained; redrawn.	Redraw, typography.
X Gauss–Bonnet theorem	Torus medallion and formula.	Retained; cleaner torus and formula placement.	Redraw.
XI Archimedes	“Calculation of the volume and area of the sphere”; formula shown generically.	Label shortened; formula clarified as the sphere–cylinder relationship, $V_s = \frac{2}{3}V_c$, $A_s = \frac{2}{3}A_{c,\text{tot}}$.	Label, notation.
XII Aharonov–Bohm effect	Magnetic flux-tube and path diagram.	Retained; formula and paths cleaned.	Redraw, typography.
XIII Navier–Stokes	Flow image credited to J.D. Kim / AMS / Stony Brook.	Vectorized line-art vortex; credit removed; repositioned to the upper right.	Image to vector.

5.2 Ellipse items (Kepler + 1–10)

Item	Original	Final	Change type
Kepler’s 1st law	Star, ellipse, planet represented compositionally.	Retained; ellipse and sun lines cleaned in the square layout.	Redraw, layout.
1 Kepler’s 2nd law	$d\theta/dt \propto 1/r^2$.	Retained; retypeset and repositioned.	Typographic cleanup.
2 Newton’s 2nd law	$F = ma$.	Retained; legend “Second” → “2nd”.	Legend style.

Item	Original	Final	Change type
3 Kepler’s 3rd law	$T^2 \propto a^3$.	Retained; retypeset.	Typographic cleanup.
4 Newton’s gravitation	$F = Gm_1m_2/r^2$.	Retained; retypeset.	Typographic cleanup.
5 General relativity	Einstein field equation.	Retained; retypeset with cleaner spacing.	Typographic cleanup.
6 Schrödinger equation	Nonrelativistic Schrödinger equation.	Retained; clearer $\hbar$, Laplacian, and potential notation.	Typographic cleanup.
7 Dirac equation	$(i\rlap{\mathcal{D}} - m)\psi = 0$ (compact slashed form).	$(i\gamma^\mu\partial_\mu - m)\psi = 0$ (explicit form).	Notation change.
8 Atiyah–Singer	Index formula.	Retained; retypeset.	Typographic cleanup.
9 Yang–Mills	$F = dA + A \wedge A$; $D\star F = 0$ style.	$F_A = dA + A \wedge A$; $d_A\star F_A = 0$.	Subscripts, operators clarified.
10 Supersymmetry	$\{Q, Q\} = P$ schematic.	Expanded spinor-indexed anticommutator relating supercharges to momentum.	Formula made explicit.

5.3 Background items (A–J)

Item	Original	Final	Change type
A Mass–energy	Background label “E=mc ² ”.	Legend reads “Einstein’s rest mass–energy equivalence”; artwork uses $E_0 = mc^2$.	Name, rest-energy notation.
B Maxwell’s equations	Four equations: $\nabla \times B = \frac{1}{c}\partial E/\partial t$, $\nabla \times E = -\frac{1}{c}\partial B/\partial t$, $\nabla \cdot B = 0$, $\nabla \cdot E = 0$.	Recast as $dF = 0$ and $d\star F = \star J$ in one compact block.	Vector calculus → differential forms (July 2026).
C Stokes’ theorem	Integral formula.	Retained; retypeset.	Typographic cleanup.
D Supergravity	Generic “Supergravity” label and formula.	Legend specifies “Minimal supergravity Lagrangian”; formula redrawn beside the Dynkin diagram.	Label specificity, redraw.
E Boundary of a boundary	$\partial\partial = 0$.	$\partial^2 = 0$.	Equivalent, more compact.
F Heisenberg uncertainty	$\Delta x \Delta p \geq \hbar/2$.	Retained; retypeset.	Typographic cleanup.
G Riemann zeta	Euler product–sum relationship.	Retained; retypeset.	Typographic cleanup.
H Feynman diagrams	Particle diagram and string–interaction detail.	Legend expanded to “Feynman and string interaction pair-of-pants”.	Label expanded.
I Shannon	<i>No original entry.</i>	New block: $H(p) = -\sum_i p_i \log_2 p_i$ with carved binary strings.	New content.
J Bekenstein–Hawking	<i>No original entry.</i>	New block at the right of the wall: $S = kAc^3/4G\hbar$ — the entropy of a black-hole horizon of area A ; gravity, quantum mechanics, thermodynamics, and information in one line.	New content (July 2026).