

WHITE PAPER ARCHITECTURAL RESEARCH ON EFABISM AND ARCHITECTURAL THEORY

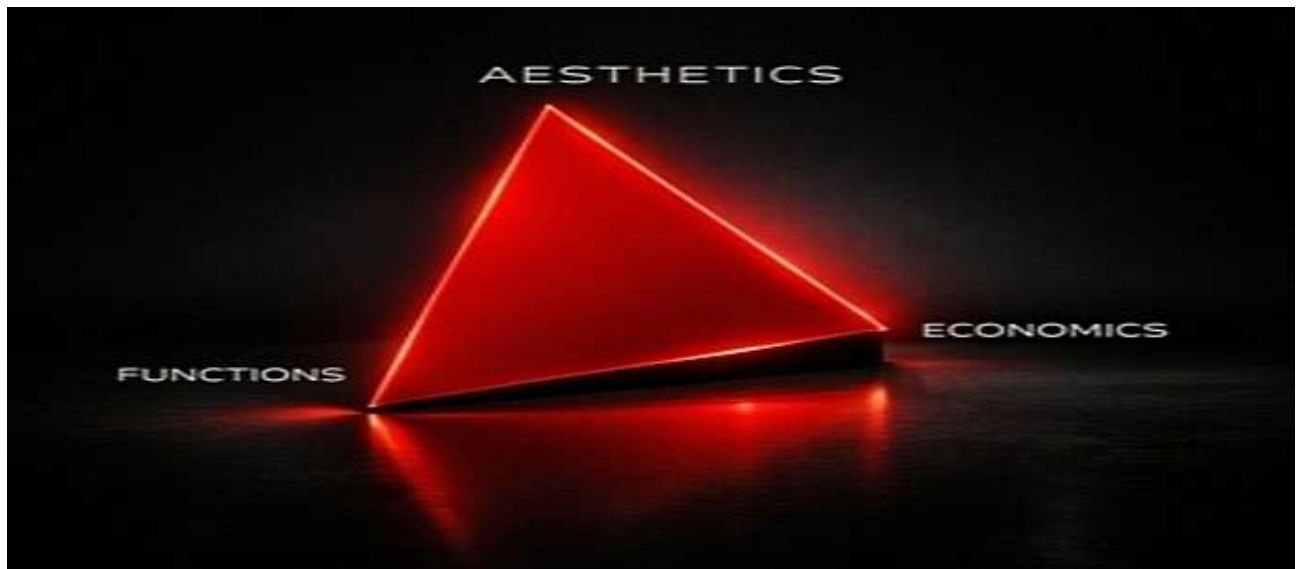
WJM Architect — Architect William J. Martin, AIA

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Target Audience: AIA Architects, Institutional Developers, Civic Clients, and Architectural Researchers

Executive Summary

EFABism: Methods of Formalizing the Econometric Mathematics of Econo-Functional Aesthetic Balance



SECTION 1

OVERVIEW

The built environment systematically suffers from single-variable optimization. Projects routinely prioritize initial cost savings, strict programmatic utility, or visual extravagance in isolation —

producing buildings that fail operationally, alienate communities, or prove financially ruinous across their lifecycle. Research across commercial and institutional project typologies consistently demonstrates that buildings optimized for a single variable incur measurably higher lifecycle costs than those designed under a balanced performance framework, while also underperforming on occupant satisfaction and long-term market value metrics.

EFABism addresses this failure mode by establishing a rigorous quantitative framework that keeps Economics (E), Functionality (F), and Aesthetics (A) in a deliberate, transparent, and justifiable relationship tailored to each building's purpose and stakeholders. Rather than treating balance as an equal weighting of all three variables, EFABism recognizes that intentional, documented asymmetry — a laboratory that maximizes F, or a civic monument that foregrounds A — is both valid and valuable, provided that asymmetry is declared, measured, and defensible.

SECTION 2

CORE MECHANICS

The framework operationalizes architectural design through three interconnected layers:

2.1 The Weight Vector (w)

Clients and architects explicitly allocate project priorities prior to design generation, subject to the constraint:

$$wE + wF + wA = 1$$

This instrument rejects the false assumption that balance requires equal weighting. It validates intentional asymmetry based on building type — maximizing functionality (F) in a research laboratory, or foregrounding aesthetics (A) in a civic monument — while ensuring that every tradeoff is consciously authorized rather than discovered after occupancy.

2.2 The Tradeoff Ledger

A transparent accounting system that replaces circular optimization functions. The Tradeoff Ledger maps the exact gains, sacrifices, stakeholder distributions, and lifecycle uncertainties of competing design options, creating an auditable record that can be revisited at each project phase. This tool directly addresses one of the most persistent sources of client-architect conflict: the gap between what was promised and what was delivered.

2.3 The Distortion Index (D)

A post-occupancy metric that mathematically measures how far a completed, inhabited building has deviated from its original declared intent. A score of $D = 0$ represents perfect delivery of design goals. Projects with high Distortion Index scores — those where budget cuts, substitutions, or scope changes compounded over time — can be systematically studied to prevent recurrence, creating a feedback loop between built outcomes and future design decisions.

SECTION 3

THE ECONOMETRIC & BUILDING-SCIENCE PROGRAM

EFABism establishes a research infrastructure that uses advanced econometric tools to inform design decisions with empirical evidence bounded by regional market conditions and dataset scope. Three methods anchor this program:

3.1 Hedonic Pricing Models (HPM)

By decomposing real market transactions, HPM estimates the approximate financial premium that buyers and tenants pay for functional performance and aesthetic longevity — separating these contributions from location, square footage, and age. This enables architects to demonstrate, with market evidence, the long-term return on material and design investments that are routinely cut from budgets on the basis of upfront cost alone.

3.2 Spatial Econometrics

Geographic clustering in real estate data distorts measured premiums. EFABism deploys spatial econometric controls — including tests for spatial autocorrelation — to ensure that measured aesthetic and functional premiums reflect genuine design value rather than neighborhood effects. *This ensures that findings reflect genuine regional variation rather than normalizing it away as a site-specific artifact.*

3.3 Building-Science Calibration

The framework measures whole-wall thermal resistance (expressed in RSI units) rather than nominal material thermal mass, enabling design teams to identify the exact performance threshold beyond which additional material investment yields diminishing returns. This precision prevents both over-specification and under-performance — two costly failure modes in high-performance building envelopes.

SECTION 4

PROFESSIONAL IMPLICATIONS

EFABism transforms architectural accountability by replacing subjective debate with data-driven decision support. The framework empowers architects to defend material and design investments against short-sighted budget cuts by demonstrating long-term lifecycle value, performance returns, and independently verified market premiums. It creates a shared language between architects, clients, developers, and financiers — grounding design conversations in evidence rather than opinion.

As an open-access, peer-extensible research framework designed to adapt across regional markets and building typologies. Its methods, datasets, and calibration protocols are intended for broad professional adoption, academic testing, and iterative improvement by the architectural research community.

CALL TO ACTION

Architects, developers, and institutional clients are invited to engage with the full EFABism white paper to explore the complete mathematical framework, regional case studies, and calibration methodology. Practitioners ready to apply EFABism on active projects can begin with the Weight Vector instrument and Tradeoff Ledger — both of which are operational at the schematic design phase with no specialized software required. Academic researchers are encouraged to contribute regional datasets to expand the empirical foundation of the Distortion Index.