RAVD – Prompt Portfolio

Curated Prompt Engineering Library by R.A. Van Dyke

*“Let your imagination live.”*

# Project Management (#ProjectManagement)

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Gap Analysis | N/A | Identify onboarding process gaps and propose improvements. |

• Generate a gap analysis on the onboarding sheet I have attached. Highlight gaps between current and desired state, and recommend actionable improvements.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Agile Project Plan Checklist | N/A | Create a project plan checklist that aligns with Agile (iterations, backlog, adaptability). |

• Generate a project plan checklist based on the recommendations from the onboarding gap analysis. Include scope, stakeholders, backlog, sprints, risks, and acceptance criteria.

# AI Roles (#AI)

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| AI Prompt Manager — Role Profile | N/A | Clarify responsibilities, skills, and education/certifications for AI Prompt Managers. |

• Explain what an AI Prompt Manager is, what they do, and what education or certifications are most useful.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Azure AI Prompt Engineering — Starter Kit | N/A | Create a practical starter kit for day-one productivity. |

• Create a starter kit for Azure AI Prompt Engineering that includes documentation, shortcuts, and sample workflows.

# Fantasy Football Analytics (#FantasyFootball)

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Monte Carlo Draft Simulation | N/A | Estimate the probability targeted players are available at pick 69. |

• Run a simulated draft (probability tree / Monte Carlo) referencing the uploaded data to understand probability that highlighted players will be available at pick 69.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Draft Board Consolidation | N/A | Combine ranking images into a sortable table for analysis. |

• Combine multiple draft ranking images into one Excel table for easy filtering by position, bye week, and draft round.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Rookie WR Combine Correlation | N/A | Correlate combine metrics and grades to early-career success. |

• Generate a summary table of the 1st 5 drafted rookie WRs from the previous 5 years using the attached combine dataset (Prospect Grade & NGS Grade). Determine correlation to success (>700 rookie yards; >1000 projected 2025 yards).

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Travis Hunter — Probability of Success | N/A | Estimate success probability using your correlation model. |

• Referencing the above results, calculate the probability that Travis Hunter will be a successful WR. Request any additional data needed to improve the prediction.

# Python & Prompt Engineering Games (#Python, #PromptEngineering)

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Python Fundamentals — Prompted Quiz | N/A | Teach core concepts interactively. |

• As a Python instructor, quiz me on the difference between integers and strings in Python, then evaluate my answer.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Prompt-Only Learning Game | N/A | Learn coding concepts through conversation tasks (no code). |

• Design an entry-level Python learning game where you ask me questions I can solve via prompting, without writing code.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Bug Priority Scoring | N/A | Create a transparent, weighted bug-priority model. |

• Generate a bug-priority scoring method with explicit weights for severity, number of customers affected, VIP status, and due-date urgency. Sort tickets by score.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Prompt Engineering Drills | N/A | Iterative micro-tasks with feedback and critique. |

• As part of a training exercise, give me small reasoning or programming tasks I can solve through prompting, then critique my attempts.

# Custom Apps (#WordSearch, #WebApp)

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Accessible Word Search Builder | N/A | Customizable, silhouette-shaped puzzles with PDF output and accessibility features. |

• Build an online customizable word-search app (headers, alphabetized left list, expressions no spaces, no backwards/diagonals, black-only, silhouette grid, dots fill gaps, bottom instructions space, single-page PDF, deployment plan).

# Cooking & Fun (#Cooking, #Lifestyle)

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Peach Compote (French Chef) | N/A | Classic peach compote technique with variations. |

• As a French Chef give me a peach compote recipe.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| French Toast (French Chef) | N/A | Custard base with heavy cream, eggs, cinnamon, brown sugar, and extract. |

• As a French Chef give me a French Toast Recipe based on these ingredients: heavy cream, eggs, cinnamon, brown sugar, butter, vanilla or almond extract.

# Operations & Customer Support Analytics (#CustomerSupport, #Sentiment)

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Zoho Email Sentiment Analysis | N/A | Summarize client sentiment and visualize trends month-to-month. |

• Referencing the Attached Zoho Data for this month, generate a sentiment analysis summary (Negative, Positive, Neutral) of emails in column C. Deliverables: per-client sentiment table, negative trend vis for this month, month-over-month negative comparison, plus any other relevant visuals. Include example mappings in the prompt.

# Six Sigma Tools — Full Edition (#SixSigma, [FORMULA\_PROMPT])

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Monte Carlo Simulation | Repeated random sampling from distributions | Model uncertainty, risk, and yield when analytic solutions are impractical. |

• [FORMULA\_PROMPT] Simulate 10,000 delivery scenarios with lead times ~ Normal(μ=5, σ=1.5); report P(delay>7 days) and histogram.

• [FORMULA\_PROMPT] Compare Supplier A (Normal 5,1.5) vs Supplier B (Normal 6,1.0) for late shipment risk.

• [FORMULA\_PROMPT] Generate P50/P80/P95 delivery time table for 10,000 simulations.

• [FORMULA\_PROMPT] Monte Carlo monthly spend with cost ~ Normal(μ=$2.50, σ=$0.40), qty=1,000; summarize mean & 95% CI.

• [FORMULA\_PROMPT] Triangular cost model (min=$2.00, mode=$2.40, max=$3.20); compute 95% CI of spend.

• [FORMULA\_PROMPT] Compare Supplier A (Normal 2.50,0.40) vs B (Uniform 2.20–3.00) cost risk profiles.

• [FORMULA\_PROMPT] Simulate defect counts for 10,000 units with p\_defect ~ Beta(2,98); show distribution.

• [FORMULA\_PROMPT] Yield model with temperature ~ Normal(200,10) & pressure ~ Uniform(90–110); estimate P(defect rate>2%).

• [FORMULA\_PROMPT] Estimate probability that defect rate exceeds 1% spec limit.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Random Number Generation | X ~ f(x; θ) | Generate synthetic data for planning, stress testing, and training. |

• [FORMULA\_PROMPT] Generate 12 months of demand from Poisson(λ=200); plot and summarize.

• [FORMULA\_PROMPT] Simulate 1,000 product demands ~ Normal(μ=250, σ=50); return percentiles.

• [FORMULA\_PROMPT] Produce 10,000 values ~ Triangular(150,200,300) to model demand uncertainty.

• [FORMULA\_PROMPT] Generate arrival times using Exponential(λ=0.2 calls/min); simulate 1,000 calls.

• [FORMULA\_PROMPT] Simulate waiting times with service ~ Normal(μ=5, σ=2); compute P(wait>10min).

• [FORMULA\_PROMPT] Create synthetic dataset: 500 arrivals/hr, service ~ Exponential(μ=3min); plot waits.

• [FORMULA\_PROMPT] Generate 100 synthetic quality scores ~ Normal(μ=80, σ=5).

• [FORMULA\_PROMPT] Produce 50 random samples ~ Uniform(70,100) for measurement variability.

• [FORMULA\_PROMPT] Simulate 1,000 Bernoulli(p=0.02) trials; report defect frequency.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Bootstrapping | Resample n with replacement; recompute statistic | Estimate CIs of statistics without normality assumptions. |

• [FORMULA\_PROMPT] Bootstrap 10,000 resamples of satisfaction scores to obtain a 95% CI for the median.

• [FORMULA\_PROMPT] Bootstrap 200 responses; report median stability, bias, and SE.

• [FORMULA\_PROMPT] Compare medians between two groups via bootstrap CI of the difference.

• [FORMULA\_PROMPT] Bootstrap a 50-sample pass/fail dataset; estimate CI for defect proportion.

• [FORMULA\_PROMPT] Compute bootstrap CIs for a 30-sample defect proportion; percentile & BCa.

• [FORMULA\_PROMPT] Run 5,000 bootstrap resamples; include distribution plot of defect proportion.

• [FORMULA\_PROMPT] Bootstrap 24 months of revenue; generate forecast intervals (median, 95% band).

• [FORMULA\_PROMPT] Estimate uncertainty of median monthly revenue via bootstrapping; density plot.

• [FORMULA\_PROMPT] Bootstrap a 12-month revenue series for 1-year forecast intervals.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Design of Experiments (DOE) | Y = β0 + ΣβiXi + ΣβijXiXj + ε | Identify factors & interactions driving response. |

• [FORMULA\_PROMPT] Full factorial with Temp (180–220°C) & Time (8–12 min), center points; simulate crispness.

• [FORMULA\_PROMPT] DOE matrix (3 levels each) and ANOVA; quantify main & interaction effects.

• [FORMULA\_PROMPT] Main effects & interaction plots; recommend optimal baking window.

• [FORMULA\_PROMPT] 2^2 factorial for molding (pressure, temperature); simulate yield and ANOVA.

• [FORMULA\_PROMPT] Effect estimates & effect Pareto chart for molding process.

• [FORMULA\_PROMPT] Optimize settings to maximize yield with confirmation runs.

• [FORMULA\_PROMPT] Fractional factorial DOE for greeting, tone, pitch, script length; define resolution.

• [FORMULA\_PROMPT] Simulate conversion outcomes and estimate standardized effects.

• [FORMULA\_PROMPT] Effects Pareto; recommend top two factors to control.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Response Surface Methodology (RSM) | Y = β0 + ΣβiXi + ΣβiiXi^2 + ΣβijXiXj + ε | Optimize responses; model curvature. |

• [FORMULA\_PROMPT] CCD for fertilizer & water; fit quadratic model for yield.

• [FORMULA\_PROMPT] Contour & 3D surface plots; identify ridge/optimum.

• [FORMULA\_PROMPT] Use desirability to find optimal fertilizer-water settings.

• [FORMULA\_PROMPT] RSM with 3 components (A,B,C); fit quadratic; evaluate lack-of-fit.

• [FORMULA\_PROMPT] Simulate response surface; identify curvature and interaction hot spots.

• [FORMULA\_PROMPT] Multi-response desirability for multiple strength metrics.

• [FORMULA\_PROMPT] RSM for service efficiency (staffing × training); fit quadratic.

• [FORMULA\_PROMPT] Contour plot of efficiency vs factors; mark feasible region.

• [FORMULA\_PROMPT] Optimize staffing/training under budget via desirability.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| FMEA | RPN = Severity × Occurrence × Detection | Prioritize risks and mitigations. |

• [FORMULA\_PROMPT] FMEA table with failure modes/causes/effects; compute and rank RPN.

• [FORMULA\_PROMPT] Simulate detection improvements and measure RPN reduction.

• [FORMULA\_PROMPT] Visualize top 5 failure modes as a heatmap.

• [FORMULA\_PROMPT] FMEA for medical device assembly steps; assign ratings; rank by RPN.

• [FORMULA\_PROMPT] Pareto chart of risks; recommend mitigations and owners.

• [FORMULA\_PROMPT] Sensitivity: which detection improvements lower RPN most?

• [FORMULA\_PROMPT] Software FMEA across testing, deployment, UX; compute RPNs.

• [FORMULA\_PROMPT] Risk matrix (severity vs likelihood); highlight critical items.

• [FORMULA\_PROMPT] Scenario-test mitigations and expected RPN shifts.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Reliability (Weibull) | R(t) = exp(-(t/η)^β) | Model lifetime; forecast failures. |

• [FORMULA\_PROMPT] Fit Weibull to bulb lifetimes; estimate β and η; plot reliability curve.

• [FORMULA\_PROMPT] Compute failure probabilities at 1k/2k/5k hours; include hazard function.

• [FORMULA\_PROMPT] Compare two bulb models via likelihood ratio test; visualize.

• [FORMULA\_PROMPT] Fit Weibull to component lifetimes; estimate P(failure ≤ 3 years).

• [FORMULA\_PROMPT] Plot hazard rate to infer failure mode (infant/random/wear-out).

• [FORMULA\_PROMPT] Compare models across suppliers; overlay reliability curves.

• [FORMULA\_PROMPT] Estimate appliance warranty claims within 2 years; provide CI.

• [FORMULA\_PROMPT] Simulate 1,000 lifetimes to quantify claim variability.

• [FORMULA\_PROMPT] Evaluate impact of improved component on claim rate (Δβ, Δη).

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Survival Analysis (Kaplan–Meier) | Ŝ(t) = Π\_{t\_i ≤ t} (1 - d\_i / n\_i) | Estimate survival with censoring. |

• [FORMULA\_PROMPT] Build Kaplan–Meier survival curve; report median survival and 95% CI.

• [FORMULA\_PROMPT] Simulate right-censoring; re-estimate survival and compare.

• [FORMULA\_PROMPT] Compare two treatments via log-rank test; include p-value.

• [FORMULA\_PROMPT] KM for time-to-repair; report median and quartiles.

• [FORMULA\_PROMPT] Compare preventive vs reactive maintenance via log-rank.

• [FORMULA\_PROMPT] Stratify by machine type; test differences.

• [FORMULA\_PROMPT] Estimate churn over 12 months; report survival at 3/6/12 months.

• [FORMULA\_PROMPT] Censor at last-seen date; plot survival with CIs.

• [FORMULA\_PROMPT] Compare retention across cohorts; log-rank and hazard ratios.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Control Charts (SPC) | X̄: CL = X̄; UCL/LCL = X̄ ± A2·R; I-MR for individuals | Monitor stability; detect special-cause variation. |

• [FORMULA\_PROMPT] Create X̄ chart for 20 subgroups; flag out-of-control points.

• [FORMULA\_PROMPT] I-MR chart for individual scores; interpret MR spikes.

• [FORMULA\_PROMPT] Apply Western Electric rules; summarize signals.

• [FORMULA\_PROMPT] Build c-chart for daily defects; compute UCL/LCL; investigate signals.

• [FORMULA\_PROMPT] U-chart for defects per unit; compare across days.

• [FORMULA\_PROMPT] Root-cause top special causes and recommend actions.

• [FORMULA\_PROMPT] X̄-R chart for 30 subgroups (n=5); analyze shifts/trends.

• [FORMULA\_PROMPT] I-MR for individual call durations; identify cause candidates.

• [FORMULA\_PROMPT] Assess capability before/after improvements.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Gage R&R (MSA) | %Contribution = σ\_gage^2 / σ\_total^2 × 100% | Quantify measurement error vs total. |

• [FORMULA\_PROMPT] Crossed Gage R&R (3 operators, 10 parts, 2 repeats); %StudyVar & %Contribution.

• [FORMULA\_PROMPT] Analyze ANOVA table; separate EV vs AV components.

• [FORMULA\_PROMPT] R charts by operator; discuss consistency.

• [FORMULA\_PROMPT] Gage R&R with 5 samples, 3 repeats; compute %Tolerance.

• [FORMULA\_PROMPT] Partition repeatability vs reproducibility; visualize components.

• [FORMULA\_PROMPT] Recommend calibration/training actions from results.

• [FORMULA\_PROMPT] Attribute agreement analysis for survey raters; estimate kappa & %agreement.

• [FORMULA\_PROMPT] Compare rater variance vs part variance; controls & SOP updates.

• [FORMULA\_PROMPT] Inter-rater reliability report with confidence bounds.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Pareto Analysis | Rank by frequency/cost/impact to reveal ‘vital few’ | Identify top contributors to prioritize improvement. |

• [FORMULA\_PROMPT] Pareto of complaint categories; cumulative % and top drivers.

• [FORMULA\_PROMPT] Quantify top 20% categories contributing to 80% complaints.

• [FORMULA\_PROMPT] Recommend top three corrective actions with owners and timelines.

• [FORMULA\_PROMPT] Pareto of downtime causes; rank by hours; identify top contributors.

• [FORMULA\_PROMPT] Simulate effect of eliminating top cause on downtime.

• [FORMULA\_PROMPT] Track monthly Pareto to verify sustained gains.

• [FORMULA\_PROMPT] Pareto of student error types; show counts and cumulative %.

• [FORMULA\_PROMPT] Countermeasures for top errors; measure impact.

• [FORMULA\_PROMPT] Before/after Pareto to show improvement.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Hypothesis Testing & Power | Power = 1 - β; t/z/χ²/F | Significance testing and study sizing. |

• [FORMULA\_PROMPT] Two-sample t-test traditional vs new method; effect size & CI.

• [FORMULA\_PROMPT] Required n for Δ=5, α=0.05, power=0.8; document assumptions.

• [FORMULA\_PROMPT] Simulate datasets to estimate achieved power.

• [FORMULA\_PROMPT] Two-sample t-test of machine means; test variance equality.

• [FORMULA\_PROMPT] Report p-value, CI, and practical significance (Cohen’s d).

• [FORMULA\_PROMPT] Sensitivity analysis of detectable effect vs sample size.

• [FORMULA\_PROMPT] Estimate n to reduce defects 4%→2% at α=0.05 with 80% power.

• [FORMULA\_PROMPT] Power calculation for binomial proportion test.

• [FORMULA\_PROMPT] Monte Carlo 1,000 pilots to estimate detection probability.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| PCA (Principal Component Analysis) | Eigen-decomposition of covariance/correlation matrix | Reduce dimensionality; discover latent patterns. |

• [FORMULA\_PROMPT] PCA on 10-question survey; extract top 3 PCs; scree plot.

• [FORMULA\_PROMPT] Interpret loadings; name components; compute PC scores.

• [FORMULA\_PROMPT] Cluster customers in PC space; visualize clusters.

• [FORMULA\_PROMPT] PCA on 5 correlated sensors; reduce to 2 PCs; variance explained.

• [FORMULA\_PROMPT] PC biplot; discuss sensor redundancy.

• [FORMULA\_PROMPT] Use PCs as features in downstream regression.

• [FORMULA\_PROMPT] PCA on 6 subject scores; identify dominant dimensions.

• [FORMULA\_PROMPT] Relate PCs to outcomes; discuss interventions.

• [FORMULA\_PROMPT] Compare PCA with factor analysis; justify choice.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Logistic Regression | P(Y=1|X) = e^(β0+βX) / (1+e^(β0+βX)) | Binary outcome modeling; interpret odds ratios. |

• [FORMULA\_PROMPT] Fit logistic model with temperature predictor; report OR and CI.

• [FORMULA\_PROMPT] Predict pass probability vs temperature; plot probability curve.

• [FORMULA\_PROMPT] Add quadratic term; test via LR test for improvement.

• [FORMULA\_PROMPT] Model graduation probability using GPA; report calibration.

• [FORMULA\_PROMPT] Simulate dataset; fit logistic; evaluate ROC AUC.

• [FORMULA\_PROMPT] Assess marginal effect of GPA on graduation odds.

• [FORMULA\_PROMPT] Fit churn model using usage and tenure; report AUC.

• [FORMULA\_PROMPT] Plot ROC and PR; choose threshold via business cost curve.

• [FORMULA\_PROMPT] Explain coefficients to non-technical stakeholders.

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| **Tool / Concept** | **Formula (plain text)** | **Use Case** |
| Nonparametric Tests | Rank-based tests (Mann–Whitney, Kruskal–Wallis, Wilcoxon) | Robust comparisons for non-normal or outlier-prone data. |

• [FORMULA\_PROMPT] Mann–Whitney test comparing two suppliers’ defect counts; p and effect size.

• [FORMULA\_PROMPT] Simulate skewed defect data; apply MW test; visualize ranks.

• [FORMULA\_PROMPT] Permutation test as robustness check; compare to MW.

• [FORMULA\_PROMPT] Kruskal–Wallis across 3 training groups; post-hoc pairwise tests.

• [FORMULA\_PROMPT] Handle outliers with rank-based tests; explain impact.

• [FORMULA\_PROMPT] Median differences with CIs via bootstrap.

• [FORMULA\_PROMPT] Wilcoxon signed-rank for paired before/after; report median shift.

• [FORMULA\_PROMPT] Simulate paired samples; test; visualize paired differences.

• [FORMULA\_PROMPT] Assess effect size (r) and practical significance.