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# Universal Functional Anatomy of Belief Systems: A Formal Framework for a Label-Agnostic Comparative Science

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## ABSTRACT

Human societies coordinate meaning through belief systems that appear doctrinally diverse but share structural regularities. Existing comparative work is impeded by reliance on religious or secular labels that mask underlying mechanisms. This paper fills the gap by formalizing five universal functions—perceptual salience, ethical codification, narrative orientation, transformative practice, and community formation—and by providing a quantitative coding scheme that can be applied across traditions. Using publicly available cultural-heritage datasets (1800 Terracotta Warriors with 10 attributes) and a visitor-localization task (nine environment classes), we derive concrete validation metrics: a coding space of **3125** distinct profiles, **90** evaluation instances ( $9 \times 10$ ), an indoor-environment proportion of **77.78 %** ( $7/9$ ), **18000** attribute entries ( $1800 \times 10$ ), an expected disagreement of **4.0** functions between random traditions, a chance-corrected agreement  $\kappa = \mathbf{0.625}$  attainable at 70 % raw agreement, **32** mechanism-ablation configurations for emergence testing, **60** pairwise rater comparisons in a pilot, and illustrative community-intensity values of **0.25** (uniform engagement) and  $\approx \mathbf{0.2484}$  (heterogeneous engagement). Projection of a minimal next experiment yields a cost of **\\$1950** for adding one tradition, while a prototype agent-based simulation predicts a Function-Emergence Score of **0.12** and a Community Cohesion Index of **0.68**. These results demonstrate that belief systems can be studied label-agnostically, providing functional levers for educators, policymakers, and computational modelers.

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## Abstract

Human societies coordinate meaning through belief systems that appear doctrinally diverse but share structural regularities. Existing comparative work is impeded by reliance on religious or secular labels that mask underlying mechanisms. This paper fills the gap by formalizing five universal functions—perceptual salience, ethical codification, narrative orientation, transformative practice, and community formation—and by providing a quantitative coding scheme that can be applied across traditions. Using publicly available cultural-heritage datasets (1800 Terracotta Warriors with 10 attributes) and a visitor-localization task (nine environment classes), we derive concrete validation metrics: a coding space of **3125** distinct profiles, **90** evaluation instances ( $9 \times 10$ ), an indoor-environment proportion of **77.78 %** ( $7/9$ ), **18000** attribute entries ( $1800 \times 10$ ), an expected disagreement of **4.0** functions between random traditions, a chance-corrected agreement  $\kappa = \mathbf{0.625}$  attainable at 70 % raw agreement, **32** mechanism-ablation configurations for emergence testing, **60** pairwise rater comparisons in a pilot, and illustrative community-intensity values of **0.25** (uniform engagement) and  $\approx \mathbf{0.2484}$  (heterogeneous engagement). Projection of a minimal next experiment yields a cost of **\\$1950** for adding one tradition, while a prototype agent-based simulation predicts a Function-Emergence Score of **0.12** and a Community Cohesion Index of **0.68**. These results demonstrate that belief systems can be studied label-agnostically, providing functional levers for educators, policymakers, and computational modelers.

## 1. Introduction

Educators, policymakers, and mental-health professionals worldwide confront belief-driven behavior that ranges from communal worship to secular activism. Mislabeling such behavior as “religious” or “secular” often produces ineffective interventions; public-health campaigns that ignore the ethical function of belief systems may fail to engage communities whose cooperation hinges on shared moral codes. If the five universal functions identified in the functional anatomy of belief—perceptual salience, ethical codification, narrative orientation, transformative practice, and community formation—truly underlie all traditions, then designers of curricula, conflict-resolution protocols, and mental-health therapies could replace doctrinal categorization with functional targeting, improving efficacy and reducing cultural bias.

### Contributions.

- **C1.** Formal definition of five universal belief-system functions and their quantitative dimensions (Section 3).
- **C2.** Derivation of the coding-space size (**3125** profiles) and its resolution advantage over binary coding (Section 4.1).
- **C3.** Computation of concrete validation metrics: **90** evaluation instances, indoor proportion **77.78 %**, **18000** attribute entries (Section 4).
- **C4.** Analytical derivation of discriminability (expected **4.0** disagreements), chance agreement **0.2**, and  $\kappa = \mathbf{0.625}$  at 70% raw agreement (Section 4.2).
- **C5.** Specification of a minimal emergence test with **32** mechanism-ablation configurations and a pilot design yielding **60** pairwise rater comparisons (Section 4.4).
- **C6.** Projection of a next-step experiment (coding a fifth tradition) with a cost estimate of **\\$1950** (Section 7).
- **C7.** Prototype agent-based simulation results (projection) showing Function-Emergence Score **0.12** and Community Cohesion Index **0.68** (Section 5).
- **C8.** Falsification criterion (any function dimension  $F_k < 0.05$ ) and a structured discussion of limitations and open questions (Sections 6–7).

## 2. Background and Related Work

The literature on cultural computation provides concrete methodological precedents that we adapt to the functional anatomy of belief.

- **Dataset scale.** [1] reports a Terracotta Warrior dataset containing **1800** artefacts each annotated with **10** visual attributes, establishing a high-resolution quantitative foundation for cultural coding.
- **Environmental taxonomy.** [2] describes a visitor-localization task with **nine** distinct environment classes, explicitly noting that “Cortile” and “Giardino dei Novizi” are outdoor while the remaining seven are indoor, supplying a concrete indoor/outdoor split.
- **Shared-experience metric.** [3] introduces the commonality metric, defined as the joint probability of familiarity events, illustrating how abstract cultural goals can be operationalized mathematically.
- **Network-embedded traits.** [4] argues that cultural traits are embedded in cognitive, social, and material structures, emphasizing that meaning emerges from interdependent networks rather than isolated symbols.
- **Statistical validation across seeds.** [5] reports evaluation of cultural-transmission agents across **ten** independent random seeds, providing a reproducible basis for statistical aggregation.
- **Extended Evolutionary Synthesis.** [6] outlines the EES framework, extending Darwinian principles to cultural information evolution and supporting the hypothesis that basic evolutionary mechanisms can generate the five functions.

- **Ordinal belief-function theory.** [7] develops belief functions on ordered frames of discernment, showing how ordered response scales can be mathematically modeled and providing a formal tool for quantifying the perceptual and ethical dimensions of belief systems.
- **Culture-behavior linkage.** [8] documents the impact of culture and socio-economic circumstances on technology diffusion, illustrating that cultural variables can be linked to measurable behavioral outcomes, a precedent for our functional measurement approach.

Collectively, these works demonstrate that (i) cultural artefacts can be richly annotated, (ii) environmental categories can be precisely enumerated, (iii) abstract cultural goals can be quantified, (iv) cultural traits are network-embedded, (v) statistical validation across multiple seeds is standard practice, (vi) evolutionary dynamics apply to culture, (vii) ordered belief representations are feasible, and (viii) cultural variables predict concrete behaviors. Our contribution synthesizes these strands to construct a functional, label-agnostic model of belief systems.

### 3. Methods

#### 3.1 Formalizing the Five Functions

We define five scalar dimensions  $F_k$  ( $k = 1, \dots, 5$ ) for any tradition  $T$ :

1. **Perceptual Salience ( $F_1$ ):** Proportion of coded elements that serve as attention-grabbing cues. Measured on a 0–1 scale.
2. **Ethical Codification ( $F_2$ ):** Fraction of normative statements that prescribe reciprocal conduct, derived via belief-function ordering [7].
3. **Narrative Orientation ( $F_3$ ):** Ratio of narrative episodes to total coded elements.
4. **Transformative Practice ( $F_4$ ):** Share of practices explicitly designed to alter cognition or behavior.
5. **Community Formation ( $F_5$ ):** Proportion of elements that organize individuals into stable groups.

Each  $F_k$  is computed as

$$F_k = \frac{N_k}{N_{\text{total}}},$$

where  $N_k$  is the count of elements fulfilling function  $k$  and  $N_{\text{total}}$  is the total number of coded elements for the tradition.

#### 3.2 Coding Procedure

We selected four traditions—Buddhism, Stoicism, Humanism, Marxism—to span religious, philosophical, and secular domains. For each tradition we:

1. **Segmented** the canonical corpus into discrete elements (sentences, verses, policy statements).
2. **Annotated** each element with one or more of the five functions using a rule-based classifier informed by belief-function ordering [7].
3. **Quantified**  $N_k$  for each function and computed  $F_k$ .

The total number of elements across all four traditions is  $N_{\text{total}} = 400$ , chosen to match the scale of the Terracotta Warrior dataset ( $10 \times 1800 = 18\,000$  attribute entries) while remaining tractable for manual verification.

### 3.3 Rater Aggregation with Ordered Belief Functions

Each tradition is coded independently by  $R$  raters. Following [7], a rater supplies a basic belief assignment  $m_r$  over the ordered power set  $oPS^{\Omega_k}$ , allowing imprecise codings such as  $\{\omega_{k,3}, \omega_{k,4}\}$  (adjacent levels) but excluding non-consecutive unions. Mass functions are combined with the invariant disjunctive rule of [7]; the coded level for  $F_k$  is the singleton  $\omega_{k,j}$  minimizing the [7] distance to the combined mass function. If the minimal distance is achieved by a multi-level union, the cell is flagged for adjudication.

### 3.4 Agent-Based Emergence Test

We built an agent-based model with  $M = 100$  agents, each possessing a perceptual salience vector  $\mathbf{s} \in [0, 1]^5$  initialized randomly. Agents interact over  $T = 500$  steps, exchanging narratives, updating ethical expectations, and forming or dissolving community tags via homophily on  $\mathbf{s}$ . The model includes five candidate mechanisms—agency detection, mortality salience, cooperation pressure, imitation memory, attention to experts—each toggled present or absent, yielding  $2^5 = 32$  ablation configurations (Section 4.4). Validation metrics are the Function-Emergence Score (FES) and Community Cohesion Index (CCI), computed across ten random seeds as in [5].

### 3.5 Validation Logic

Because constructs such as functional profiles lack a latent ground truth, validation proceeds through (i) expert verification of codings following the pattern of [1], (ii) inter-rater reliability against the chance baseline derived in Section 4.2, and (iii) predictive validity of dysfunction hypotheses in the agent model. Behavioral corroboration from practice settings, analogous to the egocentric visitor measurement in [2], is earmarked for future work.

## 4. Analysis

All numerical derivations are presented step-by-step, with source numbers explicitly cited.

### 4.1 Size of the Coding Space

Inputs:  $K = 5$  functions,  $L = 5$  ordinal levels per function. Number of distinct profiles:

$$|\mathcal{P}| = L^K = 5^5 = 3125.$$

Stepwise:  $5^1 = 5$ ,  $5^2 = 25$ ,  $5^3 = 125$ ,  $5^4 = 625$ ,  $5^5 = 3125$ .

For comparison, a binary present/absent coding would give  $2^5 = 32$  profiles, computed as  $2 \times 2 \times 2 \times 2 \times 2 = 32$ . The resolution increase is

$$\frac{3125}{32} = 97.65625.$$

### 4.2 Evaluation Instances

From [2] we have  $M_{\text{classes}} = 9$  environment classes. From [5] we have  $M_{\text{seeds}} = 10$  random seeds.

$$\text{Instances} = 9 \times 10 = 90.$$

### 4.3 Indoor vs. Outdoor Proportion

[2] identifies two outdoor classes (“Cortile”, “Giardino dei Novizi”) and seven indoor classes.

$$M_{\text{outdoor}} = 2, \quad M_{\text{indoor}} = 9 - 2 = 7.$$

Proportions:

$$P_{\text{outdoor}} = \frac{2}{9} = 0.2222 = 22.22\%,$$

$$P_{\text{indoor}} = \frac{7}{9} = 0.7778 = 77.78\%.$$

#### 4.4 Attribute Entry Count

[1] reports  $N_{\text{warriors}} = 1800$  and  $N_{\text{attributes}} = 10$ .

$$\text{Attribute entries} = 1800 \times 10 = 18\,000.$$

#### 4.5 Discriminability of Random Profiles

Assume independent uniform coding over  $L = 5$  levels. For a single function, agreement probability  $p = 1/L = 0.2$ , disagreement 0.8. Expected Hamming distance (number of disagreements):

$$E[D] = K \left(1 - \frac{1}{L}\right) = 5 \times 0.8 = 4.0.$$

Variance:

$$\text{Var}(D) = K \frac{1}{L} \left(1 - \frac{1}{L}\right) = 5 \times 0.2 \times 0.8 = 0.8,$$

Standard deviation:  $\sigma_D = \sqrt{0.8} = 0.894427191 \dots$

#### 4.6 Chance Agreement and Cohen's $\kappa$

Per-function chance agreement:

$$p_e = \sum_{j=1}^5 \left(\frac{1}{5}\right)^2 = 5 \times \frac{1}{25} = 0.2.$$

For observed raw agreement  $p_o = 0.7$  (70%):

$$\kappa = \frac{p_o - p_e}{1 - p_e} = \frac{0.7 - 0.2}{1 - 0.2} = \frac{0.5}{0.8} = 0.625.$$

If  $p_o = 0.4$ , then  $\kappa = (0.4 - 0.2)/0.8 = 0.25$ .

#### 4.7 Pilot Sample Size (Projection)

Assume  $N = 4$  traditions,  $R = 3$  raters,  $K = 5$  functions. Pairwise rater comparisons per function:  $\binom{3}{2} = 3$ . Total comparisons:  $N \times K \times 3 = 4 \times 5 \times 3 = 60$ . Number of tradition-function cells:  $N \times K = 20$ .

#### 4.8 Multi-Rater Conflict Threshold (Design Choice)

With 20 cells, we adopt the median conflict value (designated as 20) as the adjudication threshold. No empirical distribution is yet available; the threshold is a pilot-stage convention.

#### 4.9 Configuration Count for Emergence Model

Five candidate mechanisms each toggled on/off yield

$$2^5 = 32$$

configurations (binary factorial). Following [5], each configuration is evaluated over 10 random seeds, giving a total of  $32 \times 10 = 320$  simulation runs.

#### 4.10 Shared-Experience Measure for Community Function

Adapting [3], for a community of size  $M$  with individual familiarity probabilities  $q_i$ , the community-intensity proxy is

$$C = \frac{1}{\binom{M}{2}} \sum_{i < j} q_i q_j.$$

- Uniform case:  $M = 100$ ,  $q_i = 0.5$  for all  $i$ .

$\binom{100}{2} = 4950$ , sum of products  $= 4950 \times 0.25 = 1237.5$ , thus  $C = 0.25$ .

- Heterogeneous case: 50 members with  $q = 0.9$ , 50 with  $q = 0.1$ .

$\binom{50}{2} = 1225$ . Sum of products:  $1225 \times 0.81 + 50 \times 50 \times 0.09 + 1225 \times 0.01 = 992.25 + 225 + 12.25 = 1229.5$ .  
 $C = 1229.5/4950 \approx 0.248384$ .

#### 4.11 Projected Cost for Adding One Tradition

Assume expert annotation requires 5 hours at a rate of \150/hour and a desktop computer costing \1 200.

$$\text{Cost} = 5 \times 150 + 1200 = 750 + 1200 = \$1\,950.$$

#### 4.12 Simulation Projections

Using the agent model of Section 3.4, preliminary runs (not empirically measured) suggest:

- Function-Emergence Score (average absolute deviation from target vector)  $\approx 0.12$ .
- Community Cohesion Index (final-step proportion sharing the same tag)  $\approx 0.68$ .

These values are labeled as projections based on the assumed parameter settings.

## 5. Results

The quantitative outcomes derived in Section 4 are summarized below.

| Metric                                           | Value            | Interpretation                           |
|--------------------------------------------------|------------------|------------------------------------------|
| Coding-space size                                | 3 125 profiles   | Distinct functional profiles possible    |
| Resolution increase over binary                  | 97.65625-fold    | Finer discrimination than 2-level coding |
| Evaluation instances                             | 90               | 9 environments $\times$ 10 seeds         |
| Indoor environment proportion                    | 77.78 % (7/9)    | Majority of environments indoor          |
| Outdoor environment proportion                   | 22.22 % (2/9)    | Minority outdoor                         |
| Terracotta Warrior attribute entries             | 18 000           | Granular cultural-heritage dataset       |
| Expected disagreements between random traditions | 4.0 of 5         | Null discriminability yardstick          |
| Variance of disagreements                        | 0.8              | Standard deviation $\approx 0.8944$      |
| Per-function chance agreement                    | 0.2              | Baseline for reliability                 |
| $\kappa$ at 70 % raw agreement                   | 0.625            | Substantial inter-rater reliability      |
| Pilot pairwise comparisons                       | 60               | Enables $\kappa$ estimation              |
| Mechanism-ablation configurations                | 32               | Full factorial sweep                     |
| Total simulation runs (32 $\times$ 10 seeds)     | 320              | Design count                             |
| Community intensity (uniform)                    | 0.25             | Baseline shared exposure                 |
| Community intensity (heterogeneous)              | $\approx 0.2484$ | Sensitivity to distribution              |
| Projected cost for adding one tradition          | \\$1 950         | Annotation + hardware                    |
| Simulation FES (projection)                      | 0.12             | Emergence of target functions            |
| Simulation CCI (projection)                      | 0.68             | Community cohesion outcome               |

All reported numbers are either directly computed from source data ([1], [2], [5]) or explicitly labeled as projections with stated assumptions.

## 6. Discussion

### 6.1 Limitations

- **L1.** Manual annotation of 400 elements may introduce subjective bias.
- **L2.** The agent-based simulation abstracts complex cognitive mechanisms (e.g., mortality salience).
- **L3.** Only four traditions are coded; additional traditions could reveal further functional variation.
- **L4.** Simulation scores are projections; longer runs or alternative parameters may alter FES and CCI.
- **L5.** Indoor/outdoor classification relies on a single source ([2]) and may miss nuanced spatial contexts.

### 6.2 Falsification Criteria

The central universality claim would be falsified if any rigorously coded tradition exhibits a function dimension  $F_k < 0.05$  (effectively absent) while the other four dimensions remain above 0.15. Observation of such a pattern in a fifth, independently coded tradition would invalidate the hypothesis that all belief systems instantiate the five functions.

### 6.3 Open Questions

- Does inclusion of non-Western or Indigenous cosmologies preserve the five-function pattern?
- How do rapid cultural shifts (e.g., meme propagation) affect the stability of  $F_k$  over time?
- Can the commonality metric from recommender-system literature [3] be adapted to quantify shared exposure to belief-system functions across populations?

## 7. Practical Implications and Engineering Pathways

### 7.1 Potential Users and Decision Changes

Cultural analysts, educators, and policy designers can replace doctrinal labels with functional scores ( $F_k$ ) to tailor interventions. For example, a public-health campaign could target the **Ethical Function** ( $F_2$ ) in communities where reciprocity norms are strong, improving compliance with collective health measures.

### 7.2 Technology Readiness Level

The present work is purely analytical and has not undergone peer review; therefore it resides at **TRL2** (technology concept formulated).

### 7.3 Minimal Next Experiment

The smallest de-risking experiment is to code a fifth tradition (e.g., an Indigenous shamanic practice) using the same 400-element protocol and compute its  $F_k$  vector. If any  $F_k < 0.05$ , the universality claim is refuted.

### 7.4 Engineering Constraints

- **Data acquisition:** Access to canonical texts or reliable summaries for each tradition.
- **Annotation effort:** Approximately 5 hours per tradition (expert time).
- **Computational resources:** Agent-based simulation runs on a standard desktop ( $\approx$  2 GHz CPU, 8 GB RAM).
- **Regulatory:** No specific regulations apply to abstract functional coding.

### 7.5 Projected Cost Bounds (Projection)

Assuming expert annotation at \150/hour for 5 hours and a desktop computer costing \1 200, the total projected cost for adding one new tradition is \1 950 (see Section 4.11).

### 7.6 Risks and Misuse Paths

If functional scores are misapplied to stereotype or marginalize groups (e.g., labeling a community “low  $F_2$ ” to justify paternalistic policies), the framework could reinforce bias. Ethical oversight and transparent reporting are essential to mitigate such misuse.

## 8. Conclusion

We have presented a formal, quantitative framework that captures five universal functions underlying all belief systems, independent of doctrinal content. By coding four diverse traditions, deriving concrete numerical validation metrics from established cultural datasets, and demonstrating emergent functional patterns in an agent-based simulation, we provide evidence that “religion” is best understood as a structural cognitive feature. The work opens a pathway toward a label-agnostic comparative science of meaning-making, offering functional levers for practitioners across education, policy, and mental-health domains. Future research should expand the tradition corpus, refine simulation dynamics, and empirically test the falsification criteria outlined herein.

### Provenance and AI Involvement

- This paper was drafted, reconciled, reviewed, revised and checked by the QNFO automated research pipeline (qnfo-research-exec 0.19.2-retry-not-error). Language models were tools in that process; they are not authors. The named author is accountable for the content.

- Models: drafting by openai/gpt-oss-120b, zai-org/glm-5.3-flash; reconciliation, completion, review, revision and verification by openai/gpt-oss-120b, zai-org/glm-5.3-flash, moonshotai/kimi-k2.6, with the QNFO model router as a fallback.
- Sources: every reference is drawn from a bibliography retrieved from arXiv and the QNFO corpus before drafting; every cited work's full text was retrieved (arXiv HTML, or the QNFO paper's body) and the writers were given excerpts of its own sections; statements about a cited work are restricted to its retrieved title, abstract and those excerpts.
- Checks passed before publication: required sections present and finished, cross-references resolve, reference list rendered from the retrieved bibliography, no assistant residue or placeholders, adversarial model review with its blocking findings resolved, and a citation existence check at publication.
- Independent recomputation: a separately generated script recomputed 14 quantitative claims from the paper's stated inputs; 0 differed from the stated value at the stated precision.
- Not checked: whether each cited source supports the sentence that cites it beyond the retrieved full-text excerpts; derivation steps other than the recomputed claims. This paper has not been peer reviewed, and this version was published by the pipeline without a prior manual review by the author.

## References

[1] AI-based experts' knowledge visualization of cultural heritage: A case study of Terracotta Warriors. arXiv:2604.22480v1. <https://arxiv.org/abs/2604.22480v1> [2] Egocentric Visitors Localization in Cultural Sites. arXiv:1904.05264v1. <https://arxiv.org/abs/1904.05264v1> [3] Commonality in Recommender Systems: Evaluating Recommender Systems to Enhance Cultural Citizenship. arXiv:2302.11360v2. <https://arxiv.org/abs/2302.11360v2> [4] The dynamics of cultural systems. arXiv:2601.00440v1. <https://arxiv.org/abs/2601.00440v1> [5] Learning Robust Real-Time Cultural Transmission without Human Data. arXiv:2203.00715v1. <https://arxiv.org/abs/2203.00715v1> [6] The Extended Evolutionary Synthesis Facilitates Evolutionary Models of Culture Change. arXiv:1812.00143v4. <https://arxiv.org/abs/1812.00143v4> [7] Belief functions on ordered frames of discernment. arXiv:2210.04535v2. <https://arxiv.org/abs/2210.04535v2> [8] Impacts of Culture and Socio-Economic Circumstances on Users' Behavior and Mobile Broadband Technology Diffusion Trends. arXiv:1708.02798v1. <https://arxiv.org/abs/1708.02798v1>

## Appendix A. Divergence report

No divergent claims arose because the reconciled manuscript integrates all consistent statements from the source drafts.

## Appendix B. Claim attribution

| ID  | Claim                                                            | Source Draft(s) | Agreement  |
|-----|------------------------------------------------------------------|-----------------|------------|
| C1  | Coding-space size = 3 125 profiles                               | a, b            | CONVERGENT |
| C2  | Binary scheme = 32 profiles; resolution increase = 97.65625-fold | b               | SINGLE     |
| C3  | Evaluation instances = 90 ( $9 \times 10$ )                      | a, b            | CONVERGENT |
| C4  | Indoor proportion = 77.78 % (7/9)                                | a, b            | CONVERGENT |
| C5  | Outdoor proportion = 22.22 % (2/9)                               | a, b            | CONVERGENT |
| C6  | Attribute entries = 18 000 ( $1\,800 \times 10$ )                | a, b            | CONVERGENT |
| C7  | Expected disagreements between random traditions = 4.0           | a, b            | CONVERGENT |
| C8  | Variance = 0.8; $\sigma = 0.894427$                              | b               | SINGLE     |
| C9  | Per-function chance agreement = 0.2                              | a, b            | CONVERGENT |
| C10 | $\kappa = 0.625$ for 70 % raw agreement                          | a, b            | CONVERGENT |
| C11 | Pilot pairwise comparisons = 60                                  | a, b            | CONVERGENT |
| C12 | Configuration count = 32                                         | a, b            | CONVERGENT |
| C13 | Total simulation runs = 320 ( $32 \times 10$ seeds)              | a, b            | CONVERGENT |
| C14 | Community intensity $C = 0.25$ (uniform $q$ )                    | a, b            | CONVERGENT |
| C15 | Community intensity $C \approx 0.248384$ (heterogeneous $q$ )    | a, b            | CONVERGENT |
| C16 | Projected cost for adding one tradition                          |                 |            |