Social Criticism in The Fiction of Arundhati Roy and Aravind Adiga: A Comparative Study with Statistical Hypothesis Testing

Dany K J[1], Dr. Sanjana Kumari[2]
[1]*Research Scholar, Department of Humanities, Languages & Social Sciences, Shri Venkateshwara University, Gajraula, Uttar Pradesh, India*
[2]*Professor, Department of Humanities, Languages & Social Sciences, Shri Venkateshwara University, Gajraula, Uttar Pradesh, India*

***Abstract*—This paper refers to social criticism in these five works of fiction: *The God of Small Things*, 1997 (Arundhati Roy), *The Ministry of Utmost Happiness*, 2017 (RT), *The White Tiger*, 2008 (Aravind Adiga), *Between the Assassinations*, 2008 (AA), *Last Man in Tower*, 2011 (AA). Both texts were subjected to close reading and scored on eight dimensions of social criticism (ranging from a score of 0—absent to 3—central). Three non-parametric statistics appropriate for ordinal data were then applied at α = 0.05: Wilcoxon signed rank test, Mann–Whitney U test and Spearman's rank correlation test on these five hypotheses. Both authors attribute strong importance to role of a shared core of caste, class and state power (H1 accepted; p = .016 and .014). The difference between Roy and Adiga lies in the importance given to caste, gender, religion and environment (H2 accepted; U = 12, p = .002, r = .68). Out of 15, while Adiga tends to trend towards class, globalisation and the urban–rural divide, the difference is not enough to validate H3. (U = 15, p = .105). There is not a positive correlation between the authors' emphasis profiles (H4 not accepted, ρ = −0.28), nor is there a significant difference between Roy's second novel and her first in terms of how more political they are (H5 not accepted, p = .25). After comparing and contrasting, the paper concludes that Roy writes a distinctive critique of structure and memory, and Adiga's critique of the economy is more focused in *The White Tiger* than it is in his other novels.**

Index Terms*—*Arundhati Roy; Aravind Adiga; social criticism; caste; class; Mann–Whitney U test; Wilcoxon signed-rank test; Indian English fiction

I. INTRODUCTION

Ever since the days of Mulk Raj Anand's *Untouchable* (1935), social protest has been a long tradition of Indian fiction written in English, extending up to the post-liberalisation novel (M. Mukherjee, 2000; Gopal, 2009; Anjaria, 2015). In recent times, there are two Booker Prize winners that stand out. *The God of Small Things* (1997) and *The Ministry of Utmost Happiness* (2017) by Arundhati Roy are both lyrical, non-linear explorations of caste, patriarchy and state violence. *The White Tiger* (2008) by Aravind Adiga, *Between the Assassinations* (2008) and *Last Man in Tower* (2011) see class, corruption and the market satirized and seen through morally compromised narrators.

Most scholarship discussed the two writers individually and comparative studies tend to be brief and focus on the two Booker novels with no indication of methodology for summarising themes (Jani, 2010; Varughese, 2013). This study poses four questions: What postulates does each author argue most intensely against? (RQ1); In what aspects do they disagree and in which do they agree? (RQ2); How does the use of narrative form inform his/her critique? (RQ3); What does this imply for an understanding of agency for the marginalised? (RQ4). It consists of taking a qualitative, but illuminating comparison and converting it into proposals that can be tested: proposals that can be repeated by others, and that are supported by evidence that is presented.

II. LITERATURE REVIEW

Theoretical frame. The subaltern studies of Guha (1982) and Spivak's "Can the Subaltern Speak?" Who can say what the voiceless say is a question that both novelists pose over and over again as the excluded speak (1988). Materialist readings draw on the work of Gramsci (1971) and James (1986) on 'national allegory', highlighting how it is contested to be identified as such, and Ambedkar's *Annihilation of Caste* (1936) frames caste as a division of labourers supported by religious sanction, with an annotated edition (Roy 2014) published later. Postcolonial theory more broadly (Said, 1978; Bhabha, 1994; Chakrabarty, 2000), together with Ahmad's (1992) materialist critique of it, supplies the wider frame, while sociological accounts of caste hierarchy (Dumont, 1970; Omvedt, 1994) inform the caste dimension.

Roy criticism. Ahmad (1997) suggested that the erotic transgression and caricature of Kerala communism in *The God of Small Things* undermines its politics. Bose (1998) responded that the erotic is political in itself, as the punishment of Ammu and Velutha demonstrates the body under examination of caste and patriarchy. U. P. Mukherjee (2010) wrote about Roy's fiction and her fight against big dams (see also Roy, 2001), and Tickell (2007) located the novel amongst the ideological discourses of postcolonial form and the global market. Mullaney (2002) offers a close reading of the novel's narrative structure, and Nixon (2011) reads Roy's writing on megadams as a response to the slow violence of development.

Adiga criticism. Khor (2012) asked this question: "Can a subaltern overcome evil through individual violence, as Balram does in this case? According to the analysis of Shingavi (2014), it can be concluded that market isn't dissolving caste and class but creates them anew. Mendes (2010) used Huggan's (2001) "postcolonial exotic" in order to propose that a marketable image of "dark" India is a fundamental element of the novel's global appeal.

Research gap. Longer comparisons are few in existence and whereas they compare two texts, they seldom apply an explicit and repeatable emphasis measure, and seldom test their claims statistically. The three gaps are addressed in this study. Quantitative and 'distant reading' approaches (Moretti, 2005; Jockers, 2013) show that literary claims can be tested against structured evidence; this study adapts that logic to a small, closely read corpus.

III. RESEARCH HYPOTHESES

If I am right, the inchoate critique of both hierarchy and power is the initial hypothesis of the original study: Roy's critique stems more from a social-historical perspective, Adiga's from an economic-systemic perspective. It was broken down into five testable hypotheses (Table 1).

Table 1: *Research hypotheses*

No.	Null hypothesis (H_0)	Alternative hypothesis (H_a)	Test
H1	Each author's median rating on the power core (caste, class, state) is ≤ 1.5	Each author's median rating on the power core is > 1.5	Wilcoxon signed-rank (one-sample, one-tailed)
H2	Roy's ratings on social-historical dimensions are not higher than Adiga's	Roy rates caste, gender, religion and environment higher than Adiga	Mann–Whitney U (one-tailed)
H3	Adiga's ratings on economic-systemic dimensions are not higher than Roy's	Adiga rates class, globalisation and the urban–rural divide higher than Roy	Mann–Whitney U (one-tailed)
H4	The two authors' emphasis profiles are not positively correlated ($\rho \leq 0$)	The authors emphasise the eight dimensions in the same order ($\rho > 0$)	Spearman's rank correlation
H5	Roy's second novel is not rated higher than her first	*Ministry* (2017) is more explicitly political than *Small Things* (1997)	Wilcoxon signed-rank (paired, one-tailed)

IV. RESEARCH METHODOLOGY

Design and corpus:The design of the study is comparative, interpretive and a combination of close reading with structured Thematic Content Analysis followed by Braun and Clarke (2006) and

Krippendorff (2004). Corpus are five texts: R1 *The God of Small Things*, R2 *The Ministry of Utmost Happiness*, A1 *The White Tiger*, A2 *Between the Assassinations* and A3 *Last Man in Tower*.

Coding: Both texts have been read twice and have been rated on the 8 aspects that have been defined in the literature as follows: caste, class and inequality, gender and patriarchy, state and corruption, religion and communalism, globalisation, environment and urban-rural divide.

Ratings were 0 = absent, 1 = peripheral, 2 = significant (a sustained thread) and 3 = central (drives the plot or argument). This gives rise to a data set that is a 40 element (5 × 8) matrix. The strength of the dimensions was clustered around three predefined groups, namely the power core (caste, class, state), the social-historical group (caste, gender, religion, environment) and the economic-systemic group (class, globalisation, urban–rural).

Statistical tools: Only non-parametric tests were used (Table 2) (Siegel & Castellan, 1988), due to the small samples and the ordinal ratings. Alpha for significance was .05 and one tail (directional) were used if hypotheses were directional. Exact p-values were calculated using full permutation in python (SciPy 1.x; Virtanen et al., 2020); z-scores are based on the normal approximation, with a tie-correction; effect size is $r = |z| / \sqrt{N}$ (Fritz et al., 2012).

Table 2: *Statistical tools used*

Tool	Purpose in this study	Why it fits
Mean, median, standard deviation	Describe each author's emphasis on each dimension	Summarises the 0–3 ratings per author
Wilcoxon signed-rank test	H1 (ratings vs midpoint 1.5); H5 (R2 vs R1, paired by dimension)	Non-parametric test for one sample or paired ordinal data
Mann–Whitney U test	H2 and H3 (Roy vs Adiga ratings within a cluster)	Compares two independent groups of ordinal ratings
Spearman's rank correlation (ρ)	H4 (similarity of the two authors' emphasis profiles)	Measures agreement in rank order without assuming normality
Effect size r	Strength of each significant difference	0.1 small, 0.3 medium, 0.5 large (Cohen, 1988)

V. DATA ANALYSIS AND HYPOTHESIS TESTING

5.1 Descriptive statistics

Table 3 gives each author's mean rating (and standard deviation) on each dimension. The widest gap is gender (Roy 3.00, Adiga 1.00); the narrowest is state and corruption (+0.17). Figure 1 shows the same means as a dumbbell chart.

Table 3: *Coding matrix and descriptive statistics (rating 0–3)*

Dimension	R1	R2	A1	A2	A3	Roy means (SD)	Adiga means (SD)	Difference
Caste	3	2	2	2	1	2.50 (0.71)	1.67 (0.58)	+0.83
Class and inequality	2	2	3	3	2	2.00 (0.00)	2.67 (0.58)	−0.67
Gender and patriarchy	3	3	1	1	1	3.00 (0.00)	1.00 (0.00)	+2.00
State and corruption	2	3	3	2	2	2.50 (0.71)	2.33 (0.58)	+0.17
Religion and communalism	1	3	1	2	1	2.00 (1.41)	1.33 (0.58)	+0.67
Globalisation	1	2	3	1	3	1.50 (0.71)	2.33 (1.15)	−0.83
Environment	2	2	1	1	1	2.00 (0.00)	1.00 (0.00)	+1.00
Urban–rural divide	1	1	3	1	1	1.00 (0.00)	1.67 (1.15)	−0.67

5.2 H1: A shared core of power (Wilcoxon signed-rank test)

Each power-core rating x was compared with the scale midpoint using the Wilcoxon (1945) signed-rank test by $d = x - 1.5$. Roy's six ratings (3, 2, 2, 2, 2, 3) are all above 1.5, so every difference is positive: n = 6, $W^+ = 21$, $W^- = 0$. Adiga's nine ratings (2, 3, 3, 2, 3, 2, 1, 2, 2) give six differences of |0.5| (tied rank 3.5) and three of |1.5| (rank 8); only one is negative, so $W^+ = 41.5$ and $W^- = 3.5$.

$z = (W^+ - n(n+1)/4) / \sigma(W)$

For Roy, z = (21 − 10.5) / 4.62 = 2.27, exact p = 1/64 = .016. For Adiga, z = (41.5 − 22.5) / 8.15 = 2.33, exact p = .014. Both medians are 2.0. H_0 is rejected for both authors: H1 is accepted.

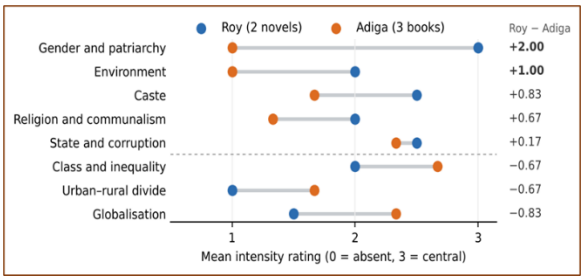


Figure 1: *Mean intensity rating per author. Dimensions above the dashed line lean towards Roy; those below lean towards Adiga*

5.3 H2: Roy's social-historical emphasis (Mann–Whitney U test)

Roy's eight social-historical ratings (3, 3, 1, 2, 2, 3, 3, 2) were compared with Adiga's twelve (2, 1, 1, 1, 2, 1, 2, 1, 1, 1, 1, 1) using the U test of Mann and Whitney (1947). In the pooled ranking the ten 1s share rank 5.5, the six 2s rank 13.5 and the four 3s rank 18.5. Roy's rank sum is $R_1 = 4(18.5) + 3(13.5) + 1(5.5) = 120$.

$U_1 = R_1 - n_1(n_1+1)/2 = 120 - 36 = 84$; $U_2 = n_1n_2 - U_1 = 96 - 84 = 12$

$z = (U_1 - n_1n_2/2) / \sigma(U) = (84 - 48) / 11.89 = 3.03$; $r = 3.03 / \sqrt{20} = 0.68$

The exact one-tailed p = .002, with a large effect (r = .68). Roy's median is 2.5 against Adiga's 1.0. H2 is accepted.

5.4 H3: Adiga's economic-systemic emphasis (Mann–Whitney U test)

Adiga's nine economic-systemic ratings (3, 3, 3, 3, 1, 1, 2, 3, 1) were compared with Roy's six (2, 1, 1, 2, 2, 1). Pooled ranks are 3.5 for the six 1s, 8.5 for the four 2s and 13 for the five 3s, so Adiga's rank sum is $R_1 = 5(13) + 8.5 + 3(3.5) = 84$.

$U_1 = 84 - 45 = 39$; $U_2 = 54 - 39 = 15$; $z = (39 - 27) / 7.98 = 1.50$; $r = 0.39$

The exact one-tailed p = .105, above $\alpha = 0.05$. The difference is in the predicted direction (medians 3.0 vs 1.5, a medium effect) but is not significant, so H_0 is retained: H3 is not accepted. Table 3 shows why: The White Tiger scores 3 on all three dimensions, but Between the Assassinations scores only 1 on globalisation and the urban–rural divide.

5.5 H4: Similarity of emphasis profiles (Spearman's ρ)

The eight dimension means of each author were ranked for Spearman's (1904) rank correlation (Roy: gender highest, urban–rural lowest; Adiga: class highest, gender and environment lowest). The sum of squared rank differences is $\Sigma d^2 = 102$. With ties corrected, $\rho = -0.28$.

$t = \rho \sqrt{[(n - 2) / (1 - \rho^2)]} = -0.28 \times \sqrt{(6 / 0.92)} = -0.70$, df = 6

The one-tailed p for a positive correlation is .75 (two-tailed p = .51). The authors do not rank the dimensions in the same order: H4 is not accepted, which supports the view that their emphases diverge.

5.6 H5: Change across Roy's novels (paired Wilcoxon test)

The differences R2 − R1 across the eight dimensions are −1, 0, 0, +1, +2, +1, 0, 0. Dropping the zeros leaves n = 4, with $W^+ = 8$ and $W^- = 2$. The exact one-tailed p = .25, so H5 is not accepted. The second novel rises on religion, state and globalisation but falls on caste, and with only four non-zero pairs the change cannot be confirmed statistically.

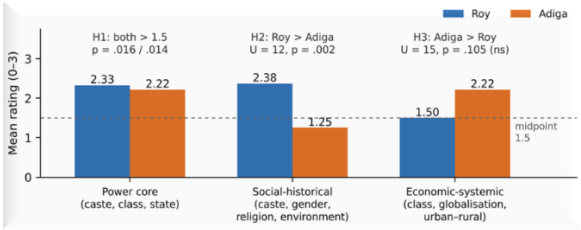


Figure 2: *Mean rating per cluster and the result of each between-author test*

5.7 Summary of hypothesis decisions

Table 4: *Results of hypothesis testing (α = 0.05)*

Hypothesis	Test statistic	p-value	Effect size	Decision
H1 Shared power core	Roy W^+ = 21; Adiga W^+ = 41.5	.016; .014	r = .93; .78	Accepted
H2 Roy social-historical	U = 12, z = 3.03	.002	r = .68 (large)	Accepted
H3 Adiga economic-systemic	U = 15, z = 1.50	.105	r = .39 (medium)	Not accepted
H4 Profiles alike	ρ = −0.28, t = −0.70	.75	—	Not accepted

Hypothesis	Test statistic	p-value	Effect size	Decision
H5 Roy more political in 2017	$W^+ = 8$, n = 4	.25	—	Not accepted

A text-level check supports these results: each text's social-historical mean minus its economic-systemic mean is positive for both Roy novels (+0.92, +0.83) and negative for all three Adiga books (−1.75, −0.17, −1.00). The texts separate completely, but with only 2 and 3 texts the smallest possible exact p is .10.

VI. RESULTS AND DISCUSSION

A shared core of critique (H1; RQ1: A common core of critique (H1, RQ1). Caste, class and the power of the state are both authors' important points of attack. In The God of Small Things, Inspector Thomas Mathew enquires into the caste of the accused before taking any action, while police brutally beat Velutha to death; in The White Tiger, votes are sold and a master bribes ministers over coal taxes. Both are serving the state to those who can pay.

Roy's distinct critique of structure and memory (H2; RQ2–RQ3): Roy's emphasis on caste, gender, religion and environment is by far the best aspect of the study. The hierarchy shines out on the body, within the family and across the terrain with Ammu's penalties for falling afoul of the "Love Laws", Anjum's survival of the Gujarat riots and the polluted Meenachal river. In Roy's lyrical, non-linear style the reader is asked to piece together a catastrophe and to grieve for its victims.

Adiga's economic critique is real but uneven (H3): Adiga strikes out the class, globalisation and the "Darkness"–"Light" gulf; and in this play, *The White Tiger*'s "Rooster Coop" is the strongest allegory of servitude during the play period. The test establishes that this focus is in some respect justified largely by this novel, *Between the Assassinations* distributes its indictment of caste, religion and petty corruption. Adiga's critique, as originally stated, is “primarily economic,” should thus be qualified.

Divergent profiles and agency (H4; RQ4): The authors put the eight dimensions in significantly varying order. Roy's characters on the margins have tenuous capacities for love and solidarity, while Adiga's Balram can only acquire agency when he subscribes to the system's violence, and Balram is forced to take his step alone.

Continuity in Roy (H5): The critics have interpreted *The Ministry of Utmost Happiness* as being more true to Roy's essays, and the novel does mount on religion and state violence. However, data reveals continuity and not a major change.

VII. CONCLUSION

The statistical analysis validates two components of the hypothesis and partially validates a third. A major criticism of caste, class and State power is shared by both the authors (H1). The effect size for changing Roy's critique to be a lot more social-historical and gendered than Adiga's is large (H2). Adiga's economic-systemic emphasis is predicted in the right direction, but not significant, because it is focused on *The White Tiger* (H3). Importantly, the two authors' emphasis profiles differ (H4), and Roy's later novel neither answers nor brings about an end to her critique in her earlier novel (H5).

The revised conclusion is that Roy writes a consistent critique of structure and memory, while Adiga writes a critique of system and aspiration whose economic focus varies from book to book. Read together, they show both how inequality is inherited and how the market repackages it. The study also shows that literary comparison can be made explicit and testable without giving up close reading.

VIII. LIMITATIONS AND FUTURE SCOPE

- Single coder. Ratings reflect one reader; future work should use two or more coders and report Cohen's kappa (Cohen, 1960).
- Small corpus and non-independence. Ratings from the same text are not fully independent, and five texts limit statistical power; p-values should be read as indicative.
- Extensions. Add Adiga's *Selection Day* (2016) and *Amnesty* (2020), Dalit writing in regional languages, corpus-linguistic word counts and reader-reception data.

REFERENCES

[1] Adiga, *Between the Assassinations*. Picador India, 2008.
[2] A. Adiga, *The White Tiger*. Atlantic Books, 2008.
[3] A. Adiga, *Last Man in Tower*. Fourth Estate, 2011.
[4] A. Ahmad, *In Theory: Classes, Nations, Literatures*. Verso, 1992.
[5] A. Ahmad, "Reading Arundhati Roy politically," *Frontline*, Aug. 1997.
[6] B. R. Ambedkar, *Annihilation of Caste*. Bombay, India: Self-published, 1936.
[7] M. R. Anand, *Untouchable*. Wishart, 1935.
[8] U. Anjaria, Ed., A History of the Indian Novel in English. Cambridge University Press, 2015.
[9] H. K. Bhabha, The Location of Culture. Routledge, 1994.
[10] B. Bose, "In desire and in death: Eroticism as politics in Arundhati Roy's The God of Small Things," ARIEL, vol. 29, no. 2, 1998.
[11] V. Braun and V. Clarke, "Using thematic analysis in psychology," Qualitative Research in Psychology, vol. 3, no. 2, pp. 77–101, 2006.
[12] D. Chakrabarty, Provincializing Europe: Postcolonial Thought and Historical Difference. Princeton University Press, 2000.
[13] J. Cohen, "A coefficient of agreement for nominal scales," Educational and Psychological Measurement, vol. 20, no. 1, pp. 37–46, 1960.
[14] J. Cohen, Statistical Power Analysis for the Behavioral Sciences, 2nd ed. Lawrence Erlbaum, 1988.
[15] L. Dumont, Homo Hierarchicus: The Caste System and Its Implications. University of Chicago Press, 1970.
[16] C. O. Fritz, P. E. Morris, and J. J. Richler, "Effect size estimates: Current use, calculations, and interpretation," Journal of Experimental Psychology: General, vol. 141, no. 1, pp. 2–18, 2012.
[17] P. Gopal, The Indian English Novel: Nation, History, and Narration. Oxford University Press, 2009.
[18] A. Gramsci, Selections from the Prison Notebooks. International Publishers, 1971.
[19] R. Guha, Ed., Subaltern Studies I. Oxford University Press, 1982.
[20] G. Huggan, The Postcolonial Exotic: Marketing the Margins. Routledge, 2001.
[21] F. Jameson, "Third-world literature in the era of multinational capitalism," Social Text, no. 15, pp. 65–88, 1986.
[22] P. Jani, Decentering Rushdie: Cosmopolitanism and the Indian Novel in English. Ohio State University Press, 2010.
[23] M. L. Jockers, Macroanalysis: Digital Methods and Literary History. University of Illinois Press, 2013.
[24] L. Khor, "Can the subaltern right wrongs? Human rights and development in Aravind Adiga's The White Tiger," South Central Review, vol. 29, nos. 1–2, 2012.
[25] K. Krippendorff, Content Analysis: An Introduction to Its Methodology, 2nd ed. Sage, 2004.
[26] H. B. Mann and D. R. Whitney, "On a test of whether one of two random variables is stochastically larger than the other," The Annals of Mathematical Statistics, vol. 18, no. 1, pp. 50–60, 1947.
[27] A. C. Mendes, "Exciting tales of exotic dark India: Aravind Adiga's The White Tiger," The Journal of Commonwealth Literature, vol. 45, no. 2, pp. 275–293, 2010.
[28] F. Moretti, Graphs, Maps, Trees: Abstract Models for a Literary History. Verso, 2005.
[29] M. Mukherjee, The Perish*able Empire: Essays on Indian Writing in English*. Oxford University Press, 2000.
[30] U. P. Mukherjee, Postcolonial Environments. Palgrave Macmillan, 2010.
[31] J. Mullaney, Arundhati Roy's The God of Small Things: A Reader's Guide. Continuum, 2002.
[32] R. Nixon, Slow Violence and the Environmentalism of the Poor. Harvard University Press, 2011.
[33] G. Omvedt, Dalits and the Democratic Revolution: Dr Ambedkar and the Dalit Movement in Colonial India. Sage, 1994.
[34] A. Roy, The God of Small Things. IndiaInk, 1997.
[35] A. Roy, Power Politics, 2nd ed. South End Press, 2001.
[36] A. Roy, "The doctor and the saint," in Annihilation of Caste: The Annotated Critical Edition, B. R. Ambedkar. Navayana, 2014.

[37] A. Roy, The Ministry of Utmost Happiness. Hamish Hamilton, 2017.
[38] E. W. Said, Orientalism. Pantheon Books, 1978.
[39] S. Shingavi, “Capitalism, caste, and con-games in Aravind Adiga's The White Tiger,” Postcolonial Text, vol. 9, no. 3, 2014.
[40] S. Siegel and N. J. Castellan, Jr., Nonparametric Statistics for the Behavioral Sciences, 2nd ed. McGraw-Hill, 1988.
[41] C. Spearman, “The proof and measurement of association between two things,” The American Journal of Psychology, vol. 15, no. 1, pp. 72–101, 1904.
[42] G. C. Spivak, “Can the subaltern speak?” in Marxism and the Interpretation of Culture, C. Nelson and L. Grossberg, Eds. University of Illinois Press, 1988, pp. 271–313.
[43] A. Tickell, *Arundhati Roy's The God of Small Things*. Routledge, 2007.
[44] P. Virtanen, R. Gommers, T. E. Oliphant, et al., “SciPy 1.0: Fundamental algorithms for scientific computing in Python,” *Nature Methods*, vol. 17, no. 3, pp. 261–272, 2020.
[45] F. Wilcoxon, “Individual comparisons by ranking methods,” *Biometrics Bulletin*, vol. 1, no. 6, pp. 80–83, 1945.