WORKING PAPER

From Theory to Algorithm:

How We are Building the World's First Real-Time Democracy Health Monitor

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Executive Summary

Democracy faces a measurement problem. While traditional indices excel at tracking institutional structures and electoral processes, they systematically overlook how citizens actually experience democracy through their daily conversations. The Democracy Discourse Index (DDI), developed through a partnership between the Global Centre for Rehumanising Democracy and Sensika Technologies and a consortium of universities, addresses this blind spot by providing the world's first real-time tool for measuring democratic health through public discourse analysis.

In an era where a single viral conspiracy can destabilise governments faster than institutional safeguards can respond, measuring democracy's pulse through discourse rather than structures offers both early warning capabilities and pathways for renewal. Our research, grounded in Critical Discourse Analysis and deliberative democracy scholarship, demonstrates that **discourse quality serves as a reliable proxy indicator for democratic health**—often signalling polarisation or renewal months before institutional metrics detect change.

The Measurement Gap in Democracy Studies

Traditional democracy measurement follows a familiar pattern: assess constitutional provisions, count electoral violations, survey expert opinions on judicial independence, and aggregate these institutional factors into comparative indices. This approach, exemplified by Freedom House, V-Dem, and The Economist Intelligence Unit, has served the democracy promotion community well for decades.

Yet it contains a fundamental limitation: **it tells us what happened, not what is happening—and certainly not what is coming.**

> When discourse becomes hostile, manipulative, or detached from shared truth, deliberation collapses into domination or identity warfare. By the time institutional indices register democratic backsliding, the conversational substrate that sustains democratic practice has often already deteriorated. We are, in effect, taking democracy's temperature with a broken thermometer.

The DDI emerged from a simple insight: democracy lives or dies in the quality of its discourse. If language shapes power relations and reveals moral choices—as Critical Discourse Analysis scholars from Fairclough[1] to van Dijk[2] have demonstrated—then systematic measurement of public discourse should reveal democracy's actual condition as experienced by citizens in digital public spheres.

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[1] Fairclough, N. (2003). *Analysing Discourse: Textual Analysis for Social Research.* Routledge
[2] van Dijk, T. A. (2008). *Discourse and Power.* Palgrave Macmillan.

Theoretical Foundation: Democracy as Discursive Practice

The DDI rests on three conceptual pillars drawn from decades of scholarship in Critical Discourse Analysis and deliberative democracy:

1. Language as Social Practice

Following Norman Fairclough[3], we understand that language is never neutral. It constructs power relations, naturalises inequalities, and reveals the moral frameworks through which communities understand themselves. When we analyse discourse, we are examining how democratic and anti-democratic narratives circulate, compete, and gain dominance.

2. Discourse as Democratic Boundary-Keeper

Drawing from Michel Foucault's work on discourse and truth regimes[4], we recognise that discourse defines what can be thought, said, and imagined in public life. The DDI seeks to track these boundaries—who speaks, who is silenced, how truth is negotiated, and whether the conversational space remains open to contestation or hardens into dogmatism.

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[3] Fairclough, N. (2003). Analysing Discourse
[4] Foucault, M. (1980). Power/Knowledge: Selected Interviews and Other Writings 1972-1977. Pantheon Books.

3. Communicative Interaction as Democracy's Substrate

Democracy is sustained through communicative interaction. When conversation embodies empathy, curiosity, civility, humility, and reflection, democratic institutions function well. When it devolves into toxicity, manipulation, and tribal warfare, even strong institutions struggle. The quality of public discourse thus serves as both indicator and determinant of democratic health.

This creates a causal chain: Democracy is sustained through communicative interaction → The quality of language reflects how citizens experience democratic inclusion → When discourse becomes hostile or manipulative, deliberation collapses → The quality of public discourse serves as a proxy indicator → Improved discourse quality signals renewal; decline signals authoritarian drift.

The Six Dimensions of Democratic Discourse

The DDI operationalises democratic discourse quality through six core dimensions, each grounded in extensive deliberative democracy research:

1

Civility Index (Civility ↔ Toxicity)

Measures respect, restraint, and the use of reasoned argument versus insult, aggression, or dehumanisation in public discourse. Research consistently shows that toxic discourse precedes institutional breakdown by creating conditions where reasoned deliberation becomes impossible.

2

Curiosity Index (Curiosity ↔ Dogmatism)

Assesses openness to new perspectives and the presence of questioning, exploratory language versus closed, ideological speech. Dogmatic discourse signals the hardening of positions that makes democratic compromise unattainable.

3

Empathy Index (Empathy ↔ Indifference)

Tracks expressions of care, solidarity, and compassion versus apathy, detachment, or hostility toward others. Empathy breakdown correlates with democratic decay as citizens lose the capacity to see political opponents as legitimate interlocutors.

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4 Trust Language Index (Trust ↔ Cynicism)

Captures public confidence in democratic institutions and leaders, and interpersonal trust within civic discourse. Trust collapse—evident in discourse before it appears in survey data—makes collective action for democratic goods impossible.

5 Information Integrity (Truthfulness ↔ Manipulation)

Evaluates the accuracy, transparency, and epistemic quality of shared information versus distortion, conspiracy, or propaganda. A shared baseline of facts is prerequisite for democratic deliberation.

6 Deliberative Depth (Reflection ↔ Reactivity)

Measures the balance between reflective, evidence-based dialogue and reactive, emotion-driven response. Democracies require slow thinking as well as fast; purely reactive discourse undermines the deliberative capacity essential for complex governance.

These dimensions emerged from systematic review of measurement frameworks including the Discourse Quality Index[5], and Online Deliberative Matrix[6], validated across parliaments, citizen assemblies, and online forums globally.

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[5] Bächtiger, A., Gerber, M., & Fournier-Tombs, E. (2022). Discourse Quality Index. In S. A. Ercan, H. Asenbaum, N. Curato, & R. F. Mendonça (Eds.), Research Methods in Deliberative Democracy (pp. 83-98). Oxford University Press.

[6] Kies, R. (2022). Online Deliberative Matrix. In S. A. Ercan, H. Asenbaum, N. Curato, & R. F. Mendonça (Eds.), Research Methods in Deliberative Democracy (pp. 148-162). Oxford University Press.

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Methodology: Human Intelligence Meets Machine Scale

The DDI's innovation lies in combining the nuance of human interpretation with the scale of artificial intelligence. Traditional content analysis remains labour-intensive and limited in scope; purely algorithmic approaches miss cultural context and linguistic subtlety. Our hybrid methodology bridges this gap.

Phase 1: Human-Coded Corpus Development

The heart of the project lies in human-coded content analysis coordinated through a consortium of universities across diverse democratic contexts. Faculty-led student research teams analyse social media discourse (Twitter/X, Facebook, YouTube, TikTok, news comment threads) across identified themes. This creates a rich training dataset that captures:

- Cultural and linguistic variation in democratic discourse
- Context-dependent interpretation of the six DDI dimensions
- Evolving narrative patterns across different political systems
- Regional specificity in how discourse quality manifests

This addresses a persistent limitation in computational social science: algorithms trained exclusively on Western, English-language data produce biased and unreliable results when applied globally.
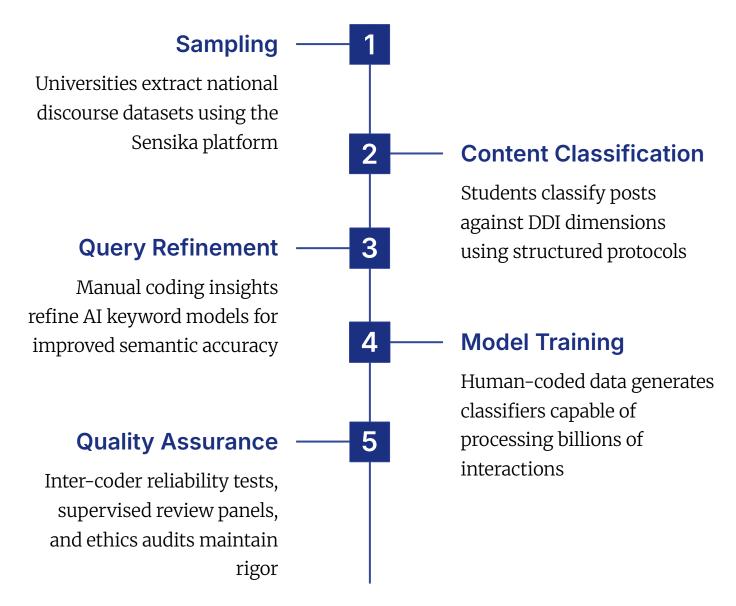
Phase 2: AI Model Training and Refinement

Human-coded data trains machine learning classifiers capable of automated scaling. The process follows five stages:

Sampling — **1**

Universities extract national discourse datasets using the Sensika platform

2 — **Content Classification**

Students classify posts against DDI dimensions using structured protocols

Query Refinement — **3**

Manual coding insights refine AI keyword models for improved semantic accuracy

4 — **Model Training**

Human-coded data generates classifiers capable of processing billions of interactions

Quality Assurance — **5**

Inter-coder reliability tests, supervised review panels, and ethics audits maintain rigor

This iterative cycle ensures that algorithmic scaling preserves the interpretive sophistication that only human coders provide while achieving the scope necessary for real-time national and global analysis.

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Phase 3: Real-Time Processing at Scale

Once trained, the DDI platform analyses millions of daily interactions across 20+ languages, providing:

National dashboards with trend analysis and dimension-specific scores

Topic toxicity analysis showing discourse quality across key political issues

Early warning signals when discourse deteriorates rapidly

Comparative analysis enabling cross-national and longitudinal research

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Global Implementation and Applications: A Multi-Continental Research Network

The DDI launches in October 2026 across pilot countries that span five continents, deliberately selected to represent diverse democratic experiences. The geographic diversity is methodologically essential. Democratic discourse operates differently across cultural contexts—what counts as "civil" or "empathetic" varies, and legitimate disagreement exists about where boundaries should lie. **Only by building the DDI from multiple democratic contexts simultaneously can we avoid the imperial gesture of universalising Western conversational norms.**

Each participating country contributes:

- University research teams conducting human coding
- Language-specific semantic models
- Cultural expertise on discourse interpretation
- Validation of findings against local political knowledge

The result is a genuinely global index, not a Western template applied elsewhere.

Applications: From Policy Analysis to Platform Moderation

The DDI's applications span multiple domains where understanding discourse quality matters:

Policy Analysis

- Track democratic health indicators in real-time
- Monitor public discourse quality across political issues
- Identify polarisation trends before they manifest institutionally
- Measure trust in institutions through conversational patterns

Academic Research

- Enable comparative discourse studies across democracies
- Conduct longitudinal trend analysis over election cycles
- Facilitate cross-cultural comparisons of deliberative quality
- Evaluate intervention effectiveness in improving public discourse

Social Media Analysis

- Detect echo chambers and filter bubbles
- Identify bridge-builders fostering cross-partisan dialogue
- Monitor misinformation spread through discourse degradation
- Assess conversation quality at scale

Platform Moderation

- Provide automated content flagging based on discourse quality
- Rank content by constructiveness rather than engagement alone
- Promote constructive dialogue through algorithmic design
- Enable toxicity detection sensitive to cultural context

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Predictive Power: Discourse as Early Warning System

Preliminary validation studies from our Disinformation Observatory demonstrate the DDI's predictive capacity. **Discourse deterioration consistently precedes democratic events by 3-6 months.** This has profound implications for democratic defence.

When trust language collapses, election legitimacy challenges follow. When civility scores plummet, political violence risks increase. When information integrity degrades, conspiracy theories gain mainstream traction. These patterns emerge first in discourse, which makes the DDI a genuine early warning system rather than a lagging indicator.

> **This temporal advantage matters.** Democratic backsliding typically follows a sequence: discourse degradation → trust collapse → institutional capture. Traditional metrics only detect the final stage. The DDI enables intervention at the first stage, when reversal and intervention remain possible.

Beyond Measurement: Pathways for Renewal

The DDI is not merely diagnostic. By making discourse quality visible and measurable, it creates accountability mechanisms and intervention pathways:

For Governments

Evidence-based civic education targeting identified discourse weaknesses; policies addressing root causes of discourse degradation; transparent reporting on democratic conversation health.

For Civil Society

Strategic interventions where discourse is fracturing; coalition-building around shared narrative goals; demonstration of impact on social cohesion metrics.

For Media Organisations

Evidence for promoting healthier information ecosystems; identification of constructive voices worth amplifying; standards beyond engagement metrics.

For Citizens

Democratisation of democracy measurement by making visible their role in shaping public discourse; tools for self-reflection on conversational practices; shared responsibility for discourse quality.

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The Humanistic Turn in Democratic Measurement

The DDI represents what we might call the **"humanistic turn"** in democratic measurement—the recognition that democracy thrives when conversation embodies empathy, humility, and reflection, not merely when institutional procedures function correctly.

This represents a paradigm shift from procedural democracy (elections, institutions, rights) to what John Dryzek calls discursive democracy—a form of communicatively rational democracy[7]. Both matter, but the latter receives far less systematic attention despite being, arguably, more fundamental.

The choice to measure empathy, curiosity, and reflection—alongside traditional metrics like civility and truthfulness—marks this humanistic approach. These are not merely instrumental goods that facilitate democratic decision-making; they are intrinsic to democratic life properly understood. This perspective aligns with contemplative democracy approaches, which emphasise the cultivation of reflective capacities as essential to democratic practice[8]. A democracy characterised by technically correct procedures but devoid of empathy or curiosity may be formally democratic but discursively authoritarian.

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[7] Dryzek, J. S. (1990). Discursive democracy: Politics, policy, and political science. Cambridge University Press.

[8] Mariotti, S. (2025). Contemplative Democracy: Politics, Practice, and Pedagogy. Oxford University Press.

Challenges and Limitations

No measurement framework is without limitations, and the DDI acknowledges several challenges:

- ### Cultural Relativity

  What constitutes "good" discourse varies across cultures. We address this through multi-cultural model training, but tensions remain between universal standards and cultural specificity.

- ### Platform Bias

  Our data sources (social media, online forums, including comments sections) skew toward politically engaged, digitally literate populations. Offline discourse and marginalised voices risk under-representation. However, considering the sheer number and reach of digital discourse, its weight remains significant.

- ### Algorithmic Limitations

  Even sophisticated AI struggles with sarcasm, context-dependent meaning, and coded language. Human oversight remains essential.

- ### Normative Contestation

  Reasonable people disagree about ideal discourse. The DDI makes normative commitments (toward empathy, truthfulness, openness) that not all democratic theorists share.

These challenges require ongoing methodological refinement. We make a commitment to transparent acknowledgment of limitations, and humility about what discourse analysis can and cannot reveal about democratic health.

Conclusion: Discourse as Democracy's Vital Signs

The Democracy Discourse Index emerges at a critical juncture. Democracy faces unprecedented challenges from disinformation, polarization, and authoritarian alternatives. Yet our measurement tools remain anchored to an earlier era, focused on institutional arrangements rather than the conversational substrate that makes institutions work.

By analysing billions of digital interactions in real-time, the DDI provides what democracy has long needed: a way to measure its lived experience as expressed by citizens themselves. This is not a replacement for institutional measurement but a necessary complement—one that captures democracy's moral and informational heartbeat.

The global launch in October 2026 represents a collaborative endeavour involving universities, policy analysts, and civic technologists across continents. It reflects a conviction that democracy's renewal requires not merely institutional reform but conversational transformation—and that such transformation requires first making discourse quality systematically visible.

> **In the end, democracy rises and falls on the quality of public discourse. The DDI makes that quality measurable, comparable, and actionable.** Whether democracies would seize the opportunity to strengthen the conversational foundations of self-governance is a different question entirely, which we are committed to following. But for the first time, we will be able to watch, in real-time, as democracy's vital signs strengthen or fade.

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Joining the DDI Consortium

The Democracy Discourse Index invites universities, policymakers, civic technologists, and donors to join this groundbreaking initiative.

- **For University Partners:** Participate in corpus development, contribute cultural expertise, and engage students in democracy measurement research.
- **For Policy Organisations:** Gain early access to discourse health indicators for strategic decision-making.
- **For Civic Technology Organisations:** Collaborate on platform applications and intervention design.
- **For Foundations and Donors:** an opportunity to contribute to building a sustainable tool that can redefine the way we measure democracy and can contribute in tangible ways to a humanistic democratic renewal.

Global Launch: October 2026

Learn more

For specific enquiries, contact Croshelle Harris: croshelle@gcrd.org.uk.

The Democracy Discourse Index is a partnership between the Global Centre for Rehumanising Democracy and Sensika Technologies, part of the joint Disinformation Observatory initiative.

This working paper is based on a presentation delivered by Dr. Jacob Udo-Udo Jacob, Georgi Angelov, and Liliya Grigorova at the Sofia Information Integrity Forum, November 6, 2025.