An IBM Watson Tone Analysis of Selected Judicial Decisions

Kelly VanBuskirk & Matthew R. Letson

The prolific judge and professor Richard A. Posner has argued that style in judicial writing ought to be seen as fundamental to the way that the law is communicated, understood, and appreciated.[1] We conducted a study that examined one aspect of judicial style: tone. We studied a few judicial decisions from New Brunswick, Canada, in the distinct field of criminal law, comparing and contrasting the judges' tone with that of selected "purist" and "impurist" jurists — and several popular fiction authors. But our analysis added a technological twist. We used the IBM Watson Tone Analyzer,[2] which measures writing tone through psycho-linguistic assessments such as the Affective Norms for English Words,[3] the Linguistic Inquiry and Word Count,[4] and the Big Five

---

[1] Richard A. Posner, *Judges' Writing Styles (and Do They Matter?)*, 62 U. Chi. L. Rev. 1420, 1421 (1995).

[2] *See Getting Started with Tone Analyzer*, IBM (Aug. 4, 2020), https://cloud.ibm .com/docs/tone-analyzer/index.html.

[3] *See* Margaret M. Bradley & Peter J. Lang, Affective Norms for English Words (ANEW): Instruction Manual and Affective Ratings 1–2 (1999) (unpublished technical report, University of Florida), http://www.uvm.edu/pdodds/teaching /courses/2009-08UVM-300/docs/others/everything/bradley1999a.pdf.

[4] *See* James W. Pennebaker, Roger J. Booth & Martha E. Francis, Linguistic Inquiry and Word Count: LIWC2007 (2007) (unpublished manual, University of Texas at Austin & University of Auckland, New Zealand), http://www.gruberpeplab.com /teaching/psych231_fall2013/documents/231_Pennebaker2007.pdf; *see also* Yla R. Tausczik & James W. Pennebaker, *The Psychological Meaning of Words: LIWC and Computerized Text Analysis Methods*, 29 J. Lang. & Soc. Psych. 24 *passim* (2010).

Aspect Scales.[5] The IBM Watson tool is essentially founded on psycholinguistics theory.[6] Our study attempted to measure what, if any, tonal patterns recognized by Watson were identifiable in the selected judicial decisions.

Pure and Impure Judicial Writing

Judge Posner supposes that judicial opinion-writing can be categorized as stylistically "pure" or "impure."[7] The pure style is marked by impersonal, predictable, and intimidating characteristics.[8] The impure style, on the other hand, is conversational, candid, and concrete.[9] Posner's "repeated complaining about the impersonality of the pure style"[10] calls into question its suitability for conforming court decisions to the larger world that the law regulates.[11] Legal-writing commentator Ross Guberman has likewise touted impure judicial opinions.[12]

To illustrate the pure style's shortcomings, Judge Posner dissected Judge Patricia Wald's opinion in *United States v. Morris*.[13] In his critique, Judge Posner asserted that the opinion's purist writing style obscured a fundamental sociolegal issue at the heart of the case,[14] and his assertion escalated to an allegation that "the

---

[5]   *See* Colin G. DeYoung, Lena C. Quilty & Jordan B. Peterson, *Between Facets and Domains: 10 Aspects of the Big Five*, 93 J. Personality & Soc. Psychol. 880 *passim* (2007).

[6]   *See Getting Started with Tone Analyzer*, note 2 above.

[7]   Posner, 62 U. Chi. L. Rev. at 1433.

[8]   *Id.* at 1426–32.

[9]   *Id.*

[10] *Id.* at 1433.

[11] *Id.* at 1435.

[12] Ross Guberman, *What a Breeze: The Case for the "Impure" Opinion*, 16 Scribes J. Legal Writing 57 (2014–2015).

[13] 977 F.2d 617 (D.C. Cir. 1992).

[14] Posner, 62 U. Chi. L. Rev. at 1441.

style of the opinion retard[ed] the search for meaning."[15] Referencing Judge Wald's essay on judicial writing (in volume 4),[16] Judge Posner went so far as to speculate that his federal-bench colleague viewed the pursuit of elegance as antiquated.[17] Judge Wald's spirited and creative response suggested otherwise, but also offered up support for the purist style.[18]

A Brief Exploration of Psycholinguistic Tools

This study was not meant to develop an in-depth understanding of psycholinguistic theory or of the IBM Watson Tone Analyzer's operation. Nor was it meant to justify either the pure or impure writing style theorized by Judge Posner. Instead, our goal was to conduct a preliminary assessment of selected judicial decisions to identify psycholinguistic patterns, if any, that may exist. We hoped to measure those patterns against the patterns found in randomly selected decisions by two jurists renowned for what Judge Posner characterizes as impure writing: Lord Alfred Thompson Denning and Justice Oliver Wendell Holmes, Jr.[19] We also wanted to measure those patterns against the patterns seen in short stories by four acclaimed authors (who were randomly selected). The resulting analysis seeks to foster a better understanding of judicial decision-making and writing, or at least to identify further questions and invite further study of judicial decision-writing in that context.

A cursory review of applicable psycholinguistic assessment theories and tools is useful in understanding the findings of this

---

[15]   *Id.* at 1442.

[16]   *See* Patricia M. Wald, *How I Write*, 4 Scribes J. Legal Writing 55 (1993).

[17]   Posner, 62 U. Chi. L. Rev. at 1443.

[18]   Patricia M. Wald, *A Reply to Judge Posner*, 62 U. Chi. L. Rev. 1451 (1995).

[19]   Judge Posner described Holmes as a notable impurist, and it was Holmes that Posner supposed Judge Wald to see as a "charming fossil." Posner, 62 U. Chi. L. Rev. at 1443.

small study. Affective Norms for English Words (ANEW) pro-vides a set of normative emotional ratings for 1,034 English words on the affective dimensions of pleasure, arousal, and dominance.[20] ANEW has been replicated in a number of other languages, in-cluding Spanish,[21] Italian,[22] and Portuguese.[23] The ANEW measure-ment of emotional responses to words was derived from the Self-Assessment Manikin,[24] which depicts a number of values along three emotional dimensions.[25] ANEW is based on persons' rank-ings of the words on three axes: unhappy versus happy; excited versus calm; and controlled versus in control.[26] Some random ex-amples of word rankings on these three scales are illustrated be-low:

---

[20] *See* Ryan A. Stevenson, Joseph A. Mikels & Thomas W. James, *Characterization of the Affective Norms for English Words by Discrete Emotional Categories*, 39 Behav. Res. Methods 1020 *passim* (2007); *see also* Bradley & Lang, note 3 above.

[21] *See* Jaime Redondo et al., *The Spanish Adaptation of ANEW (Affective Norms for English Words)*, 39 Behav. Res. Methods 600 *passim* (2007).

[22] *See* Montefinese et al., *The Adaptation of the Affective Norms for English Words (ANEW) for Italian*, 46 Behav. Res. Methods 887 *passim* (2014).

[23] *See* Ana Paula Soares et al., *The Adaptation of the Affective Norms for English Words (ANEW) for European Portuguese*, 44 Behav. Res. Methods 256 *passim* (2012).

[24] Peter J. Lang, "Behavioral Treatment and Bio-behavioral Assessment: Com-puter Applications," in *Technology in Mental Health Care Delivery Systems* 119 *passim* (Joseph B. Sidowski, James H. Johnson & Thomas A. Williams eds., 1980).

[25] Bradley & Lang, note 3 above.

[26] *Id.*

Figure 1. Affective Norms for English Word Values[27]

Word No.	Word	Valence (Happiness) Mean	Arousal (Excitement) Mean	Dominance (Control) Mean
20	annoy	2.74	6.49	5.09
654	beautiful	7.60	6.17	6.29
549	bed	7.51	3.61	6.88
588	dead	1.94	5.73	2.84
145	enjoyment	7.80	5.20	6.46
156	failure	1.70	4.95	2.40
174	friend	7.74	5.74	6.74
216	hostage	2.20	6.76	2.83
276	mighty	6.54	5.61	7.23
289	murderer	1.53	7.47	3.77

The Linguistic Inquiry and Word Count (LIWC) sorts words used in text into more than 80 different categories, which were initially judged in 1992 and 1994, but revised in 1997 and 2007.[28] The program has been found to accurately identify emotion in language, with its ratings of positive and negative emotion words corresponding with human ratings of the written materials that contain those words.[29] Writers' personalities can also be assessed by the LIWC.[30] Writers who score high in Openness tend to use articles, longer words, and insight words more often — and present-tense causation words less often — than low-Openness writers.[31] Highly Conscientious writing is

---

[27]   *Id.*

[28]   Tausczik & Pennebaker, 29 J. Lang. & Soc. Psych. 24 *passim*.

[29]   *Id.* at 32.

[30]   Alastair J. Gill, Scott Nowson & Jon Oberlander, *What Are They Blogging About? Personality, Topic and Motivation in Blogs* 18 *passim* (2009) (unpublished paper from the Proceedings of the Third International ICWSM Conference, San Jose, Cal.), https://www.researchgate.net/publication/221298035 _What_Are_They_Blogging_About_Personality_Topic_and_Motivation_in _Blogs; *see also* Tausczik & Pennebaker, 29 J. Lang. & Soc. Psych. *passim*.

[31]   *See* notes 3, 4, 5, and 20.

marked by positive emotion words, more occupation-specific words, and few negations, exclusive words, and discrepancies.[32]

Another personality style that is especially relevant is Agreeableness, which is marked by use of first-person singular and positive emotion words.[33] Finally, the Big Five Aspect Scales has been validated as a tool for measurement of the "big five" dimensions of personality: extraversion, agreeableness, conscientiousness, neuroticism, and openness.[34] Key emotional, language, and social tones in writing are summarized in Figures 2-4.

Based on the IBM Tone Analyzer's measurement characteristics, we anticipated that the judicial decisions would demonstrate an emotional tone of sadness, disgust, and perhaps anger, and an analytical and confident language tone. The social tone of the decisions was more difficult to predict.

Figure 2. Emotional tone measures different types of emotions and feelings expressed in writing[35]

Emotion	Description
Joy	Joy or happiness has shades of enjoyment, satisfaction, and pleasure. There is a sense of well-being, inner peace, love, safety, and contentment.
Fear	A response to impending danger. It is a survival mechanism that is a reaction to some negative stimulus. It may be a mild caution or an extreme phobia.
Sadness	Indicates a feeling of loss and disadvantage. When a person can be observed to be quiet, less energetic, and withdrawn, it may be inferred that sadness exists.
Disgust	An emotional response of revulsion to something considered offensive or unpleasant. It is a sensation that refers to something revolting.
Anger	Evoked as a result of injustice, conflict, humiliation, negligence, or betrayal. If anger is active, the individual attacks the target, verbally or physically. If anger is passive, the person silently sulks and feels tension and hostility.

---

[32] James W. Pennebaker & Laura A. King, *Linguistic Styles: Language Use as an Individual Difference*, 77 J. Personality & Soc. Psychol. 1296 *passim* (1999).

[33] *Id.*

[34] Jacob B. Hirsh & Jordan B. Peterson, *Personality and Language Use in Self-Narratives*, 43 J. Res. in Personality 524 *passim* (2009).

[35] *See* notes 3, 4, 5, and 20.

Figure 3. Language tone describes perceived writing style[36]

Language Tone	Description	Low Value Score: < 0.5	High Value Score: > 0.75
Analytical	A person's reasoning and analytical attitude about things.	Little or no evidence of analytical tone.	More likely to be perceived as intellectual, rational, systematic, emotionless, or impersonal.
Confidence	A person's degree of certainty.	Little or no evidence of confidence in tone.	More likely to be perceived as assured, collected, hopeful, or egotistical.
Tentative	A person's degree of inhibition.	Little or no evidence of tentativeness in tone.	More likely to be perceived as questionable, doubtful, or debatable.

Figure 4. Social tone describes the writer's interaction[37]

Conscientiousness			Extraversion		Emotional Range		Openness	
	High	Low	Low	High	Low	High	Low	High
High	Helpful, cooperative, considerate, respectful, polite	Dependent, simple	Unpretentious, self-effacing	Effervescent, happy, friendly, merry, jovial	Soft-hearted, agreeable, obliging, humble, lenient	Sentimental, affectionate, sensitive, soft, passionate	Generous, pleasant, tolerant, peaceful, flexible	Genial, tactful, diplomatic, deep, idealistic
Low	Strict, rigid, stern	Coarse, tactless, curt, narrow-minded, callous	Inconsiderate, impolite, distrustful, uncooperative, thoughtless	Bullheaded, abrupt, crude, combative, rough	Cynical, wary of others, reclusive, detached, impersonal	Critical, selfish, ill-tempered, antagonistic, grumpy	Insensitive, unaffectionate, passionless, unemotional	Shrewd, eccentric, individualistic

Baseline Examples of Tone Analysis

To better appreciate the measurements generated by the IBM Watson Tone Analyzer, we applied them to a series of writings that served as baseline comparators. We randomly selected works in five comparator groups: (1) five short stories by celebrated

---

[36]   *Id.*

[37]   *Id.*

authors; (2) four decisions by Justice Oliver Wendell Holmes, Jr., who was identified by Judge Posner as an impurist judicial writer; (3) four decisions by Justice Louis D. Brandeis, a leading purist writer, according to Judge Posner; (4) four decisions by Judge Patricia Wald, whose decision in *United States v. Morris*[38] attracted special attention from Judge Posner as an example of pure judicial decision-writing; and (5) four decisions by Lord Alfred Thompson Denning, M.R., a renowned British judge whose famous and influential opinion-writing would almost certainly be characterized as impurist under Judge Posner's assessment. Again, we selected these writings to aid comprehension of the tone-analysis results and inform the data generated by this study. We did not select these writings with a structured methodology.

Contrast with Selected Literary Works

For this study, we randomly selected short stories by acclaimed authors Ernest Hemingway, Edgar Allan Poe, and Mark Twain, as well as works by award-winning contemporary writers K.J. Orr and Alix Hawley, to discern the IBM program's measurements. (See Figure 5 below.) None of the short stories demonstrated a "very likely" presence of any particular emotion, but they did exhibit a range of "likely" emotions that included joy and fear. Three of the five stories "likely" had analytical language tone, but four of the five stories also reflected a tentative tone. Regarding social tone, all five stories demonstrated openness, but only two were in the "very likely" range. We'll see later that openness is among the tonal characteristics that figure prominently in judicial decision-writing. Agreeableness, a tone that was not present in any of the judicial decisions, appeared in three of five short stories. This characteristic is marked by positive-emotion

---

[38]   977 F.2d 617.

word usage and self-references and would therefore not be expected in judicial decision-making.

Figure 5. Tone Analysis of Five Short Stories

Short Story	Author	Emotion		Language		Social	
A Very Short Story (published in *In Our Time*) [1924]	Ernest Hemingway	Joy (likely) Sadness (likely)	0.59 0.59	Tentative (likely)	0.51	Openness (likely) Conscientiousness (likely) Agreeableness (very likely) Emotional range (likely)	0.55 0.51 0.87 0.66
Disappearances 2016 BBC National Short Story Award (published in *The Guardian*) [Oct. 4, 2016]	K.J. Orr	Disgust (likely) Fear (likely) Joy (likely) Sadness (likely)	0.52 0.58 0.53 0.55	Analytical (likely)	0.55	Openness (very likely) Agreeableness (likely)	0.78 0.51
Daniel Boone, By Himself (published in *The Walrus*) [Oct. 29, 2013]	Alix Hawley	None above	0.50	Tentative (likely)	0.65	Openness (likely)	0.64
The Pit and the Pendulum (published in *Tales of Mystery and Imagination*) [1919]	Edgar Allan Poe	Fear (likely) Sadness (likely)	0.59 0.59	Analytical (likely) Tentative (likely)	0.68 0.57	Openness (very likely)	0.92
The Celebrated Jumping Frog of Calaveras County (published in *The Saturday Press*) [Nov. 18, 1865]	Mark Twain	Joy (likely)	0.59	Analytical (likely) Tentative (very likely)	0.53 0.78	Openness (likely) Agreeableness (likely)	0.69 0.70

Justice Oliver Wendell Holmes, Jr.

Judge Oliver Wendell Holmes, Jr., was an American jurist, first on the Massachusetts Supreme Court (1882–1902) and later on the United States Supreme Court (1902–1932).[39] As a judicial

---

[39] John Fox, *The Supreme Court, Biographies of the Robes: Oliver Wendell Holmes*, Thirteen/WNET New York (Dec. 2006), https://www.pbs.org/wnet /supremecourt/capitalism/robes_holmes.html.

writer, Holmes developed a reputation as "The Great Dissenter" based on the eloquence of his dissenting opinions.[40] His dissent in *Abrams v. United States*[41] is thought by some to be the most important opposing judicial statement in American history.[42] Holmes was rightly named by Judge Posner as a leader in the impurist judicial writing style.[43]

For this study, four of Holmes's judicial opinions were randomly selected by searching for his work on the website Justia.com. The selected decisions were those that appeared first on the website, as listed in Figure 6 below. We made no effort to conduct a comprehensive analysis of the tone of Holmes's complete jurisprudence, and we gave no consideration to whether the selected decisions in Figure 6 are representative of his entire body of work.

It is immediately striking that Holmes's writing consistently reflected higher openness scores than did the short stories. (Figure 5.) The average openness score in the short stories was 0.716, while the average score in Holmes's writing was 0.938. Also in the field of social tone, it is notable that conscientiousness and emotional range were other prominent features of Holmes's works (averaging 0.868 and 0.810). These features were almost completely absent in the short stories. As for language, the Holmes decisions had remarkably consistent analytical content, with each falling into the 0.74 to 0.80 range and averaging 0.765.

---

[40]   *Id.*

[41]   250 U.S. 616 (1919).

[42]   Andrew Cohen, *The Most Powerful Dissent in American History*, Atlantic (Aug. 10, 2013), https://www.theatlantic.com/national/archive/2013/08/the -most-powerful-dissent-in-american-history/278503/.

[43]   *See* Posner, 62 U. Chi. L. Rev. at 1432.

Figure 6. Tone Analysis of Four Decisions by Judge Oliver Wendell Holmes, Jr.

Case	Issue	Emotion	Language	Social	
Buck v. Bell, 274 U.S. 200 (1927)	Sterilization of mentally disabled person	Joy 0.53 (likely) Sadness 0.50 (likely)	Analytical 0.74 (likely)	Openness (very likely) Conscientiousness (very likely) Emotional range (very likely)	0.97 0.94 0.81
Georgia v. Tenn. Copper Co., 206 U.S. 230 (1907)	Injunctive relief sought against the discharge of noxious gases by an extrastate corporation	None likely	Analytical 0.75 (likely) Tentative 0.66 (likely)	Openness (very likely) Conscientiousness (very likely) Emotional range (likely)	0.95 0.82 0.80
New York Tr. Co. v. Eisner, 256 U.S. 345 (1921)	A claim to recover estate taxes	None likely	Analytical 0.78 (very likely)	Openness (very likely) Conscientiousness (very likely) Extraversion (likely) Emotional range (very likely)	0.90 0.89 0.54 0.84
Abrams v. United States, 250 U.S. 616 (1919) (dissenting)	Antigovernment conspiracy	None likely	Analytical 0.79 (very likely) Tentative 0.60 (likely)	Openness (very likely) Conscientiousness (very likely) Emotional range (very likely)	0.93 0.82 0.79

Justice Louis D. Brandeis

Justice Louis D. Brandeis was raised in Kentucky as the son of Jewish immigrants. In 1877, he finished first in his class at Harvard Law School before developing a thriving practice in Boston, where he became one of America's most famous and influential lawyers. Brandeis was appointed to the U.S. Supreme Court in 1916 and served on the bench for 23 years. Judge Posner has characterized Brandeis's writing style as purist.[44]

---

[44]   *Id.*

As with the Holmes decisions, we randomly selected the Brandeis decisions simply by searching "Judge Brandeis" on Justia.com. We made no effort to conduct a comprehensive analysis of the tone of Brandeis's complete jurisprudence, and we gave no consideration to whether the selected decisions were representative of his entire body of work.

The four Brandeis opinions (Figure 7) were similar to the Holmes opinions in social tone. They had an average openness score of 0.908, compared to 0.938 in the Holmes opinions. The Brandeis opinions had an average conscientiousness score of 0.850, versus 0.868 for Holmes. And Brandeis scored an average of 0.838 in the emotional-range category, while the Holmes decisions scored 0.810. But the language tone in Brandeis's opinions produced a different pattern from that seen in Holmes's opinions. Brandeis used a markedly less analytical tone, falling into the range of 0.51 to 0.79, with an average score much lower than that found in the Holmes opinions (0.635 for Brandeis; 0.765 for Holmes).

Figure 7. Tone Analysis of Four Decisions by Justice Louis D. Brandeis

Case	Issue	Emotion	Language	Social	
New State Ice Co. v. Liebmann, 285 U.S. 262 (1932) (dissenting)	Legislation limiting the manufacture of ice	Sadness 0.52 (likely)	Analytical 0.60 (likely)	Openness (very likely)	0.91
				Conscientiousness (very likely)	0.81
				Extraversion (likely)	0.56
				Emotional range (very likely)	0.83
Olmstead v. United States, 277 U.S. 438 (1928) (dissenting)	Use of wiretap evidence	None likely	Analytical 0.51 (likely)	Openness (very likely)	0.95
				Conscientiousness (very likely)	0.82
				Emotional range (very likely)	0.80

Whitney v. California, 274 U.S. 357 (1927) (concurring)	Jurisdiction to review a state court in a case of criminal syndicalism	None likely	Analytical (very likely)	0.79	Openness (very likely) Conscientiousness (very likely) Emotional range (very likely)	0.95 0.92 0.79
Chicago Bd. of Trade v. United States, 246 U.S. 231 (1918)	Antitrust law	None likely	Analytical (likely) Tentative (likely)	0.64 0.71	Openness (very likely) Conscientiousness (very likely) Emotional range (very likely)	0.86 0.85 0.93

Judge Patricia M. Wald

In 1977, Patricia Wald became the first woman appointed to the District of Columbia Circuit Court of Appeals, and she became that court's Chief Judge in 1986.[45] She wrote more than 800 opinions over a 22-year judicial career in the United States before being appointed to the International Criminal Tribunal for Yugoslavia.[46] As stated above, Judge Posner characterized Wald's writing style as purist, and he critiqued her *United States v. Morris* opinion in an article on judicial style.

We selected three of the four Judge Wald decisions using the same method that we used to select the Holmes and Brandeis decisions. For the fourth case, however, we specifically selected the *Morris* case because of Judge Posner's critique of it. We have some reason to believe that the *Morris* opinion was fairly typical. In her response to Posner, Judge Wald described *Morris* as "an obscure five-page opinion of mine so insignificant that even I had to dig into memory to recall it."[47] Again, we made no effort to conduct

---

[45]   *Ad Hoc Tribunals Oral History Project: Patricia M. Wald*, Brandeis University (Dec. 12, 2014), https://www.brandeis.edu/ethics/internationaljustice/oral -history/interviews/wald.html.

[46]   *Id.*

[47]   Wald, 62 U. Chi. L. Rev. at 1451.

a comprehensive analysis of the tone of Judge Wald's complete jurisprudence, and we did not consider whether the selected decisions were representative of her entire body of work.

As for openness, the Wald decisions produced an average score of 0.727, well below that of the Brandeis (0.908) and Holmes (0.938) writings. Similarly, the Wald opinions reflected a lower emotional-range result (0.698, compared to 0.838 and 0.810 for Brandeis and Holmes, respectively). But Wald's analytical-language tone was extremely consistent, with three of four decisions measuring 0.83 and the fourth measuring 0.81. Also, three of the four Wald works showed an emotional tone of sadness, and all three of those measured precisely the same, at 0.63.

Figure 8. Tone Analysis of Four Decisions by Judge Patricia M. Wald

Case	Issue	Emotion	Language	Social	
Cal. Ass'n of Physically Handicapped, Inc. v. Fed. Commc'ns Comm'n, 848 F.2d 1304 (D.C. Cir. 1988)	Consideration of conducting hearing en banc	Sadness (likely) 0.63	Analytical (very likely) 0.83	Openness (likely)	0.71
				Conscientiousness (likely)	0.56
				Emotional range (likely)	0.63
Mich. Citizens for Indep. Press v. Thornburgh, 868 F.2d 1300 (D.C. Cir. 1989) (dissenting)	Predatory pricing	Sadness (likely) 0.63	Analytical (very likely) 0.83	Openness (likely)	0.71
				Conscientiousness (likely)	0.56
				Emotional range (likely)	0.63
United States v. Spann, 997 F.2d 1513 (D.C. Cir. 1993)	Appeal based on use of an allegedly improper jury-verdict form	Sadness (likely) 0.63	Analytical (very likely) 0.83	Openness (likely)	0.71
				Conscientiousness (likely)	0.56
				Emotional range (likely)	0.63
United States v. Morris, 977 F.2d 617 (D.C. Cir. 1992)	Cocaine possession	None likely	Analytical (very likely) 0.81	Openness (very likely)	0.78
				Conscientiousness (very likely)	0.83
				Emotional range (very likely)	0.90

Lord Denning

Lord Alfred Denning sat on the English Court of Appeal as Master of the Rolls from 1962 to 1982.[48] He was renowned for his colorful and controversial decisions, and at the time of his death in 1999 was praised by some as being one of the most influential judges of the modern era.[49] Sir Stephen Sedley[50] praised Lord Denning's extraordinary knack for clear, compelling legal style:

> His literary style, in fact, is perhaps his most underrated achievement. . . . Denning's judgments in case after case performed the feat, achieved by no other judge, of speaking directly and compellingly to ordinary people in well-constructed and lucid prose. Concepts which lawyers had struggled to articulate, clashes of doctrine which seemed insoluble, would emerge in his judgments as crystalline statements of principle. . . . [T]his accessibility of language was the rock on which his popularity and influence were built.[51]

It was this — Lord Denning's famous writing prowess — that attracted us to the tone of his opinions as comparators with the New Brunswick judicial decisions. Four well-known Denning decisions, identified in Figure 9 below, were chosen based on their familiarity and their appearances in randomly referenced legal commentaries. We made no comprehensive analysis of Denning's complete jurisprudence or whether the selected decisions were representative of his entire body of work.

Lord Denning's writing displayed more joy (0.59) than that of Holmes, Brandeis, and Wald. Joy appeared in three of his four

---

[48] 3 Charles Stephens, *The Jurisprudence of Lord Denning: A Study in Legal History in Three Volumes: Freedom Under the Law: Lord Denning as Master of the Rolls, 1962–1982* 1 (2009).

[49] Max Loubser, *Lord Denning*, 12 Stellenbosch L. Rev. 3, 3–4, 6–7, 9 (2001).

[50] High Court [1992–2002], Court of Appeal [2002–2011].

[51] Stephen Sedley, *Lord Denning Obituary: A Benchmark of British Justice*, Guardian (Mar. 6, 1999), https://www.theguardian.com/news/1999/mar/06/guardianobituaries.

decisions. Only one decision from the other three jurists registered joy, and even then only at a threshold level (Holmes, 0.53). Lord Denning's writing displayed openness (0.763) on par with Wald (0.728). But Denning and Wald both registered lower openness scores than Holmes (0.938) and Brandeis (0.918). Lord Denning's writing shows conscientiousness (0.673) consistent with Wald (0.628), with both scoring much lower than Holmes (0.868) and Brandeis (0.850). Only on the measure of emotional range did Lord Denning (0.783) come closer than Wald (0.698) to the earlier jurists (Holmes, 0.810; Brandeis, 0.838).

Figure 9. Tone Analysis of Selected Lord Denning Decisions

Case	Issue	Emotion		Language		Social	
Miller v. Jackson [1977] EWCA Civ 67	Injunction request to prevent the playing of cricket	Joy (likely) Sadness (likely)	0.55 0.54	Analytical (likely) Tentative (likely)	0.70 0.56	Openness (very likely) Emotional range (likely)	0.83 0.73
Jarvis v. Swans Tours Ltd. [1972] EWCA Civ 8	Misrepresentation and breach of warranty, vacation accommodations	Joy (likely) Sadness (likely)	0.61 0.61	Analytical (likely)	0.63	Openness (likely) Conscientiousness (likely) Emotional range (likely)	0.67 0.69 0.67
Jackson v. Horizon Holidays Ltd. [1974] EWCA Civ 12	Breach of contract for vacation	Joy (likely)	0.60	Analytical (likely)	0.69	Openness (likely) Conscientiousness (very likely) Emotional range (very likely)	0.75 0.79 0.84
Thornton v. Shoe Lane Parking Ltd. [1970] EWCA Civ 2	Ticket exclusion	None likely		Analytical (very likely) Tentative (likely)	0.76 0.53	Openness (very likely) Conscientiousness (likely) Emotional range (very likely)	0.80 0.54 0.89

Having measured tone in judicial decisions involving a variety of subjects, we then narrowed our focus to an examination of criminal cases, anticipating our eventual comparison of those

results (see Figure 10 below) to the results from the New Brunswick criminal cases.

Figure 10. Criminal Decisions by Holmes, Brandeis, and Wald

Case	Issue	Emotion	Language	Social
Abrams v. United States, 250 U.S. 616 (1919) (Holmes, dissenting)	Antigovernment conspiracy	None likely	Analytical 0.79 (very likely) Tentative 0.60 (likely)	Openness 0.93 (very likely) Conscientiousness 0.82 (very likely) Emotional range 0.79 (very likely)
Brown v. United States, 256 U.S. 335 (1921) (Holmes)	Murder	Fear 0.50 (likely)	Analytical 0.73 (likely)	Openness 0.96 (very likely) Conscientiousness 0.79 (very likely) Emotional range 0.87 (very likely)
McBoyle v. United States, 283 U.S. 25 (1931) (Holmes)	Transporting stolen aircraft		Analytical 0.57 (likely) Tentative 0.67 (likely)	Openness 0.89 (very likely) Conscientiousness 0.57 (likely) Emotional range 0.92 (very likely)
Whitney v. California, 274 U.S. 357 (1927) (Brandeis, concurring)	Criminal syndicalism		Analytical 0.80 (very likely)	Openness 0.95 (very likely) Conscientiousness 0.92 (very likely) Emotional range 0.79 (very likely)
Schaefer v. United States, 251 U.S. 466 (1920) (Brandeis, concurring)	Espionage	Joy 0.56 (likely)	Analytical 0.71 (likely) Tentative 0.61	Openness 0.95 (very likely) Conscientiousness 0.88 (very likely) Emotional range 0.75 (very likely)
Olmstead v. United States, 277 U.S. 438 (1928) (Brandeis, dissenting)	Use of wiretap evidence	None likely	Analytical 0.51 (likely)	Openness 0.95 (very likely) Conscientiousness 0.82 (very likely) Emotional range 0.80 (very likely)

United States v. Morris, 977 F.2d 617 (D.C. Cir. 1992) (Wald)	Cocaine possession	None likely	Analytical 0.81 (very likely)	Openness 0.78 (very likely) Conscientiousness 0.83 (very likely) Emotional range 0.90 (very likely)
United States v. Williams, 891 F.2d 921 (D.C. Cir. 1989) (Wald)	Drug offenses	Anger 0.52 (likely)	Analytical 0.76 (very likely)	Openness 0.84 (very likely) Conscientiousness 0.90 (very likely) Emotional range 0.93 (very likely)

The New Brunswick Decisions

Our criteria for choosing New Brunswick decisions were arbitrary but yet grounded in our desire to analyze judicial tone in decisions that have broad societal significance. After we weighed the possibilities, criminal-law decisions drew our focus. Because criminal cases involve an alleged violation of the Criminal Code of Canada, they have a heightened public importance and deal with issues of accepted societal expectations. Commercial-law disputes occur in a different framework altogether and are often centered on private financial interests and advancement. Thus, they were less desirable for our study. Wrongful-dismissal cases were a stronger possibility but were thought to fall between criminal and commercial cases on the public-importance spectrum. Most members of society are employed and are thus subject to the extensive legal regulatory regime that governs employment. But criminal cases still offered a broader sweep of societal implications.

We selected criminal cases from April 1, 2016, to April 1, 2017, that were available on the public legal-information website www.canlii.org, which is maintained by the law societies of Canada. The search term *criminal* was entered into the CanLII search filter on the website's "New Brunswick cases" page. The search

produced 21 criminal-law decisions, 12 of which were analyzed in this study. The results appear in Figure 11 below.

Figure 11. Tone Analysis of 12 New Brunswick Judicial Decisions

	Case	Judge	Issue	Emotion		Language		Social	
1	*R. v. Morning-star*, 2016 NBQB 212 (CanLII) Moncton Judicial District	Justice John Walsh	First-degree murder	Joy (likely)	0.69	Analytical 0.58 (likely) Tentative 0.55 (likely)		Openness (very likely)	0.90
2	*R. v. Morning-star*, 2017 NBQB 7 (CanLII) Moncton Judicial District	Justice John Walsh	Sentenc-ing, murder	Disgust (likely) Sadness (likely)	0.54 0.54	Analytical 0.72 (likely)		Openness (very likely) Conscientiousness (likely)	0.89 0.74
3	*Kennett v. HMQ*, 2017 NBQB 49 (CanLII) Fredericton Judicial District	Justice Terry Morrison	Seized assets	Anger (likely) Sadness (likely)	0.51 0.51	Analytical 0.85 (very likely)		Openness (very likely) Conscientiousness (very likely)	0.90 0.89
4	*Losier v. R.*, 2016 NBQB 213 (CanLII) Bathurst Judicial District	Justice Larry Landry	Driving while impaired	Anger (likely)	0.51	Analytical 0.85 (very likely)		Openness (very likely) Conscientiousness (very likely)	0.90 0.89
5	*R. v. Savoie*, 2016 NBQB 135 (CanLII) Campbellton Judicial District	Justice Fred Ferguson	Criminal negli-gence causing death	Anger (likely) Sadness (likely)	0.55 0.54	Analytical 0.80 (likely)		Openness (very likely) Conscientiousness (very likely)	0.92 0.89
6	*R. v. Wilbur Dedam*, 2016 NBQB 223 (CanLII) Miramichi Judicial District	Justice Tracey Deware	Sexual assaults	Anger (likely) Disgust (likely) Sadness (likely)	0.54 0.51 0.51	Analytical 0.64 (likely)		Openness (very likely) Conscientiousness (very likely)	0.92 0.89
7	*R. v. Deas*, 2017 NBQB 31 (CanLII) Saint John Judicial District	Justice Darrell J. Stephenson	Drug offenses	Anger (likely)	0.53	Analytical 0.68 (likely)		Openness (very likely) Conscientiousness (very likely)	0.93 0.84

8	*Monteith v. Canada* (Attorney General), 2016 NBQB 164 (CanLII) Saint John Judicial District	Justice H.H. McLellan	Parole	None likely	Analytical 0.86 (very likely) Tentative 0.51 (likely)	Openness 0.90 (very likely) Conscientiousness 0.87 (very likely)
9	*Gallant v. Canada* (Attorney General), 2016 NBQB 165 Saint John Judicial District	Justice H.H McLellan	Parole	Sadness 0.51 (likely)	Analytical 0.76 (very likely) Tentative 0.53 (likely)	Openness 0.61 (likely) Conscientiousness 0.61 (likely) Extraversion 0.75 (very likely)
10	*R. v. Rossignol*, 2016 NBQB 187 Saint John Judicial District	Justice Darrell J. Stephenson	Sentencing, drug offenses	Sadness 0.55 (likely)	Analytical 0.66 (likely)	Openness 0.93 (very likely) Conscientiousness 0.90 (very likely) Emotional range 0.78 (very likely)
11	*R. v. Tucker*, 2017 NBQB 17 (CanLII) Saint John Judicial District	Justice William Grant	Sentencing, murder	Disgust 0.54 (likely) Sadness 0.53 (likely)	Analytical 0.72 (likely)	Openness 0.92 (very likely) Conscientiousness 0.80 (very likely)
12	*R. v. Haggerty*, 2016 NBQB 142 Saint John Judicial District	Justice Darrell J. Stephenson	Armed robbery & parole	Sadness 0.52 (likely)	Analytical 0.75 (very likely)	Openness 0.85 (very likely) Conscientiousness 0.93 (very likely) Agreeableness 0.52 (likely) Emotional range 0.81 (very likely)

In 11 of the 12 criminal cases examined, the writing tone conveyed emotion measured in the 0.50–0.57 range, which suggests that very little emotion was present. Eight of the decisions (67%) demonstrated elements of sadness, indicating a feeling of loss or disadvantage. Five of the decisions (42%) demonstrated anger (an indication of injustice, conflict, humiliation, negligence, or betrayal), and three (25%) suggested disgust, or a response of revulsion. All three decisions that demonstrated disgust involved

offenses against other persons (murder, assault, and sexual assault). Anger without disgust was found primarily in decisions that involved offenses against the public (driving while impaired, drug offenses, seizure of assets, and firearms violations); one decision that involved criminal negligence causing death, however, also expressed anger without disgust.

Of note, only two of the eight criminal cases decided by the classical U.S. jurists (Brandeis, Holmes, and Wald) revealed fear or anger, and even then only in minimal amounts. But disgust and anger were common elements in the New Brunswick criminal cases. None of the noncriminal decisions by the classical U.S. jurists displayed any fear, disgust, or anger.

The New Brunswick judges' language had a consistent presence of analytical tone. Three of the decisions (25%) suggested tentativeness in the range of 0.51–0.56, while none of the decisions contained language that significantly indicated confidence.

As for social tone, all but one of the New Brunswick decisions demonstrated high, "very likely" openness. And all but two measured "very likely" for conscientiousness. At the same time, very few of the New Brunswick decisions scored high on emotional range. This differed from the classical U.S. jurists, who each scored high on the emotional range, particularly in their criminal cases.

One New Brunswick decision, *Gallant v. Canada*, measured relatively low (0.61) in both openness and conscientiousness, but significantly higher (0.75) in extraversion. The extravert writing style is characterized by high verb and pronoun usage, and fewer negative emotion words.[52] This finding was anomalous among the decisions.

Figure 12 offers a global summary of our findings, including tone measurements from the short-story authors.

---

[52]   Gill, Nowson & Oberlander, note 30 above, at 20.

Figure 12. Summary of Tone Analysis (All Sources)

Writer	Context	Emotional		Language		Social	
Short-story authors	Several	Joy Sadness	0.342 0.346	Analytical Tentative	0.352 0.402	Openness Agreeable	0.716 0.416
Oliver W. Holmes	U.S. Justice, early 20th century			Analytical Tentative	0.765 0.315	Openness Conscientiousness Emotional	0.938 0.868 0.810
Louis D. Brandeis	U.S. Justice, early 20th century			Analytical Tentative	0.635 0.178	Openness Conscientiousness Emotional	0.908 0.850 0.838
Patricia M. Wald	U.S. judge, late 20th century	Sadness	0.472	Analytical	0.825	Openness Conscientiousness Emotional	0.727 0.628 0.698
Alfred T. Denning	U.K. judge, late 20th century	Joy Sadness	0.440 0.288	Analytical Tentative	0.695 0.273	Openness Conscientiousness Emotional	0.763 0.505 0.783
New Brunswick judges	New Brunswick judges, early 21st century	Anger Sadness Disgust	0.225 0.379 0.150	Analytical Tentative	0.736 0.114	Openness Conscientiousness Emotional	0.878 0.779 0.217

Discussion

We wonder whether tonal differences between the short stories, the classical jurists' decisions, and the New Brunswick decisions offer insights into the ways that judicial writing can be made comprehensible and appealing to the general public. If one accepts that the popular short stories we selected are appealing to the public, along with Sedley's favorable assessment of Denning's "lucid prose," then it may be that the tonal qualities of those writings, where different from New Brunswick decisions, are informative and potentially useful. We are especially interested in the presence of "joy" on the emotion scale and of "emotional range" on the social scale. These seem to differ between the three categories of writing analyzed in this study.

Conscientiousness was a common feature among the judicial writers, both classical and in New Brunswick. This tone was found in only one of the short stories, and only at a low level

(0.51). We wonder whether conscientiousness as a component of judicial writing makes it less relatable or agreeable to the general public.

The results of this small study suggest that the emotional, language, and social tones of judicial decision-writing in the criminal-law context, at least in New Brunswick, Canada, are highly predictable. The majority of the decisions we examined bear remarkable tonal similarities, particularly for social tones of openness and conscientiousness. Remembering that the measurements of writing tone applied by the IBM Tone Analyzer consider usage of words and their contexts, we find it unsurprising that the judicial decisions demonstrate comparable tones. The consistency of analytical-language tone, however, and the very high demonstrations of openness and conscientiousness in social tone invite further investigation, including analysis of judicial decisions made in other fields of law. One implication of our results is that New Brunswick judges writing criminal-law decisions use similar words and word patterns, and that they do so in a formulaic manner that evidences highly comparable writing styles.

Potential Areas and Value of Future Study

There may be value in analyzing the tone of a larger number of criminal-law decisions to generate validity and generalizability of the resulting data. And expanding the analysis to include judicial decisions in other legal contexts, such as business law, employment law, and personal-injury law, would provide more insights into the characteristics of judicial writing. The results may be useful to lawyers who make written submissions in their cases and also to law societies and law schools that educate the lawyers who are ultimately appointed as judges. Further, the results of additional analysis may help judges enhance reader comprehension and party satisfaction.

A tone analysis of advocates' written submissions may also yield some practical value, especially if a correlation emerges between the tone of written court submissions and the outcome of cases. It might also be possible to assess whether the tone of written submissions influences the tone of resulting judicial decisions.