THE MURKY ETHICS OF EMOJI: HOW SHALL WE REGULATE A WEB FOR GOOD? ©

Elizabeth Kirley* and Marilyn McMahon†

I.   Introduction

From humble origins, the emoji was elevated to cultural icon status in 2016 when New York's Museum of Modern Art purchased the original collection of 176 emoji graphics for its permanent collection.[1] The Museum welcomed those "humble masterpieces of design" as the seeds of the "explosive growth of a new visual language."[2] Such honours reflect the surging interest that emoji have inspired in the interconnected disciplines of linguistics, semiotics, machine learning, even law, for the enrichment they bring to human communications.

Understanding how emoji humanize the first non-verbal language born of the digital world[3] was the focus of our previous article, *The Emoji Factor: Humanizing the Emerging Law of Digital Speech,*[4] where we concluded that emoji are the "seminal workings of a nuanced, rebus-type language."[5] We took note of how emoji choice and context can add to the ambiguity of a text message, sometimes with dire consequences: texters are increasingly summoned to courts of law for death threats, intimidation, or extortion, as well as civil violations of defamation, contract, and property agreements. Noting that judges and lawyers are struggling with the evidentiary importance of this novel pictography,[6] we proposed formation of a team of experts in various disciplines from linguistics and semiotics to cognitive learning and law.

This paper builds on that investigation by exploring how the social media industry is responding to public demand that it expand the emoji collection to reflect our individual differences.[7] We consider the ethical fallout of those decisions by asking two research questions: 1) how are emoji changing to reflect human diversity; and 2) do the resulting designs breach laws

---

[1] Amanda Hess, *Look who's Smiley now: MoMA acquires original emoji*, NYTIMES (26 October 2016). https://www.nytimes.com/2016/10/27/arts/design/look-whos-smiley-now-moma-acquires-original-emoji.html.   The Unicode Consortium, composed of volunteers who standardize the appearance and use of emoji, attribute the rise of modern emoji to the Japanese: " 絵 (e ≅ picture) 文字 (moji ≅ written character)". Others suggest the tiny ideograms originated from Chinese road signs and Japanese pager graphics in the 1990s.

[2] Paul Galloway, *The Original Emoji Set Has Been Added to The Museum of Modern Art's Collection*, MoMA (26 October 2016), https://stories.moma.org/the-original-emoji-set-has-been-added-to-the-museum-of-modern-arts-collection-c6060e141f61. The ❤️ emoji was launched in the 1990s by Japan's largest mobile phone operator, NTT DoCoMo.

[3] Arielle Parues, *The Wired Guide to Emoji*, WIRED (2 January 2019), https://www.wired.com/story/guide-emoji/.

[4] Elizabeth Kirley & Marilyn McMahon, *The Emoji Factor: Humanizing the Emerging Law of Digital Speech*, TENN. L. REV. (Winter 2018) 85:2, 517, https://tennesseelawreview.org/home/.

[5] *Id*.

[6] The word 'pictography' might be slightly premature at this point, suggesting a discrete writing system such as Sumerian cuneiform and Egyptian hieroglyphs.

[7] This paper focuses on the emoji based on code provided by the Unicode Consortium. It does not address commercial icons known as "stickers".

or ethical norms with respect to privacy, human rights, and data security. Our methodology includes a comparative examination of research and new 'personalized' offerings by internet companies such as Facebook and Twitter, as well as the standards board of the Unicode Consortium, to more accurately reflect emoji users' physical uniqueness. Our thesis is that through their graphic simplicity and broad accessibility, emoji are well placed as ambassadors of inclusion but are challenged by the privacy invasions created by their data use by third parties. As well, the acceptance by the Unicode Consortium of certain emoji raises ethical questions about their political messages and unspoken biases that hold potential to offend as well as include. We conclude that, as contributors to that expanding digital language, we have a responsibility to use ethical regulation to "rethink a Web that is truly inclusive and open, a Web for good."[8]

The paper proceeds in four parts: in Part I we consider how social media companies 'personalize' the user experience so that emoji designs reflect our differences. Part 2 reveals the limitations and ethical landmines that emerge from emoji diversification efforts. In Part 3 we consider initiatives to build an ethical web and in Part 4 we offer recommendations to legal and ethical regimes on both sides of the Atlantic to develop a more ethical artificial intelligence that reflects human differences while respecting data privacy and informational security.

II.   The Power of Emoji to Speak Our Minds

         A.   Do Emoji Form a New Digital Language?

It is no surprise that, the more we gravitate to non-verbal texting the greater the need for digital speech tools to make our messages clearer and more expressive of our intentions. Emoji meet many of those communications needs, although not always in the same way for each of us.[9] For some, they offer a sense of 'delightfulness' or humor that motivates engagement.[10] For others they satisfy a desire for play and amusement, even building trust among participants.[11] Emoji can

---

[8] The Web Conference, THEWEBCONF.ORG, https://www2019.thewebconf.org/about.
[9] Hannah Miller et al., *'Blissfully Happy' or 'Ready to Fight': Varying Interpretations of Emoji*, Univ. of Minn. GroupLens Research Paper (2016) http://www-users.cs.umn.edu/~bhecht/publications/ICWSM2016_emoji.pdf finding that, when viewing the same emoji design, *i.e.*, viewed on the same platform, people disagreed 25% of the time on whether the emoji had a positive, neutral, or negative connotation. When viewing the emoji designs across different platforms, the study found that the disagreements only increase.
[10] Shatha Ali A Hakami, *The Importance of Understanding Emoji: An Investigative Study,* University of Birmingham, (Spring 2017) RES. TOP. HCI.
[11] Liuba Y. Belkin & Naomi B. Rothman, *Do I Trust You? Depends on What You Feel: Interpersonal Effects of Emotions on Initial Trust at Zero-Acquaintance*, 10 NEG. & CONFLICT. MGMT. RES. 3 (2017); *see also* J. Jobu Babin,

feed our need for puzzle solving, mystery, and intrigue.[12] They can also add emotional punctuation to clarify the sender's intent, similar to an exclamation mark.[13] Emoji are immensely popular, but a smaller constituency might use them more cautiously, aware of their need for context to avoid coming off as frivolous, inappropriate, or too emotional.[14]

Emoji also add tone of voice. Compare, for example, the different inflection in the following comments: "Yeah, the film was pretty good...😐" and "Yeah, the film was pretty good...😍." Our choice of emoji significantly reduces the ambiguity in our intentions and produces two very different messages.[15] Conversely, certain emoji deliberately confuse or ambiguate, depending on the textual content: again, consider the subtle but unclear tone injected to these messages: "Your idea sounds pretty radical 😉" where the Winking Face is adding a "just kidding" punctuation, and "Way to score on the exam 🤓", which may or may not be complimentary. Then there is the emoji that sends an invitation at the same time it is setting a non-committal tone or offering a way out to a suggestion that might seem too forward to the recipient: "Maybe we could meet over coffee? 🤪." And then there is the phatic role an emoji like 👍 or 👌 can serve, a pause but without interjecting anything meaningful, such as "Right!", "So…" or "Indeed".

A Picture Is Worth a Thousand Words: Emojis, Computer-Mediated Communication, & Trust, (unpublished, shared by the author) where Babin examines the role of emoji within the gaming context.

[12] Xuan Lu et al., *Learning from the ubiquitous language: an empirical analysis of emoji usage of smartphone users,* Proceedings ACM INT. JT. CONF. PERV. & UBIQ. COMP 770-780 (2016), demonstrating "that the categories and frequencies of emojis used by these users provide rich signals for the identification and the understanding of cultural differences of smartphone users." (abstract)

[13] John McWhorter, *Txting is killing language. JK!!* TED TALKS (Feb. 2013), http://www.ted.com/talks/john_mcwhorter_txtng_is_killing_language_jk?language=en.

[14] See further, Hannah Miller et al., *Understanding emoji ambiguity in context: The role of text in emoji-related miscommunication,* 11TH INT. CONF. WEB & SOC. MED., AAAI Press (2017) http://www.brenthecht.com/publications/icwsm17_emojitext.pdf.

[15] Gaël Guibon et al., *From Emojis to Sentiment Analysis*. WACAI 2016, Brest France, http://www.enib.fr/wacai/. For more on the growth in popular appeal, *see* R. Bruner, *How emojis have completely revolutionized communication from tears of joy to bacon.* TIME (15 July 2016) http://time.com/4408803/how-emoji-have-completely-revolutionized-communication-from-tears-of-joy-to-bacon; and M. Alt *How emoji got to the White House*, THE NEW YORKER (6 May 2015) http://www.newyorker.com/culture/culture-desk/how-emoji-got-to-the-white-house.

The meteoric rise in emoji popularity is a very recent phenomenon.[16] While the first icons to be publicly available were released by the J-phone in Japan in 1997,[17] it was only when a software team at Google petitioned in 2010 for emoji recognition by the California based non-profit Unicode Consortium (the Consortium),[18] that the first array of emoji were released for use across platforms for all personal communication devices.[19] We get an idea of the icons' popularity when we realize that by mid-2018 there were 2,823 Consortium approved emoji; by the end of that year over 5 billion emoji had been sent on Facebook Messenger alone.[20] Today, the Consortium works closely with the World Wide Web Consortium (W3C) and the International Organization for Standardization (ISO) to ensure that emoji are freely available to all major operating systems, search engines, applications and across the Web regardless of your location, gender, age, computing literacy, or culture.[21]

The virtues of choosing emoji to communicate are numerous: their compactness reduces the effort of input; they are also rich in semantics, adept at expressing vivid emotions, and pose no language barriers. Such advantages render emoji a "ubiquitous language"[22] and so research has sufficient scale to confidently measure behaviour by analyzing big data sets. The trade-off, of course, is the privacy of our data and security of our communications.

[16] T. Dimson, *Emojineering part 1: Machine learning for emoji trends*, TUMBLR.COM (2015), http://instagram-engineering.tumblr.com/post/117889701472/emojineering-part-1-machine-learning-for-emoji/, reporting that Instagram, an online mobile photo-sharing, video-sharing, and social-networking platform claimed in March 2015 that nearly half of the texts posted on its site contained emoji.

[17] The first emoji of the digital age were created in 1999 by Japanese artist Shigetaka Kurita. Kurita worked on the development team for "i-mode," an early mobile internet platform from Japan's main mobile carrier, DOCOMO.

[18] "On a laptop, server, or mobile phone every character you type, every character you see, is Unicode." Mark Davis, *Unicode & Emoji*, UNICODE CONF. Presentation, http://unicodeconference.com/presentations-41/S9T2-Davis.pdf. The unseen coding skeleton for emoji is the Unicode standard, which is the foundation for text in all modern writing systems. Within Unicode, various code points, or numbers, transform characters into emoji. To make them machine understandable, a special encoding system is needed, called Unicode Transformation Format (UTF).

[19] The Unicode Consortium maintains an approved list of such emoji, with codes so that they may be rendered in running text. As of June 2017, the Consortium had standardized 2,666 emoji, which are made available to end-users via mobile phone manufacturers or browser-specific keyboards, and thus a wide variety is available.

[20] Represented on the Consortium's technical board are such blue-chip tech companies as Apple, Google, Facebook and IBM.

[21] Although In the early days, symbols had different encoding systems across different platforms, when Google and Apple standardized UNICODE, they made it possible for the emoji to jump to global prominence. In its 2011 iPhone release, Apple introduced the first emoji keyboard, enabling global distribution. The Unicode inventory of emoji exists only in black and white; display of the icons in colour is "made available by the respective vendors for use in Unicode emoji documents and charts or are marked as available for non-commercial reuse," according to *Emoji Images and Rights,* UNICODE.ORG, http://unicode.org/emoji/images.html.

[22] Xuan Lu, *Learning from the Ubiquitous Language: an Empirical Analysis of Emoji Usage of Smartphone Users,* UBICOMP '16, (12-16 September 2016), Heidelberg, Germany, http://www-personal.umich.edu/~qmei/pub/ubicomp2016-emoji.pdf.

B. Do Emoji Speak for Me?

Social sorting is going on when users choose emoji that they perceive as having a different meaning that those chosen by their neighbor. Disparities in emoji interpretation cover many diversity issues: race, age, gender, culture, sexual identity, language.[23] Age discrepancies were highlighted in a short street poll in 2016 conducted on the ABC American talk show Jimmie Kimmel Show Live! A random sampling of people on the streets of Los Angeles were shown emoji with risqué alternative translations.[24] When shown the 👉👌 emoji combination, for example, several younger adults saw it as representing the sex act, but such innuendo was missed by older adults of both genders. Similar results fell along age lines when the eggplant (🍆) emoji was shown: a penis for some younger interviewees but eggplant for most older ones. A similar age breakdown came with the taco (🌮) emoji: "vagina" suggested by young interviewees, "taco" for seniors. In other words, the interviews supported the finding of a University of Minnesota research team that, while emoji speak to everyone, they are not always saying the same thing.[25]

Recently there has been a surge of dissatisfaction with emoji graphics as too stereotypical. Standard emoji approved by the Consortium have been seen as too Caucasian, too western, too male- and youth-focused.[26] Before 2016, for example, the Santa Claus icon came in one prototype: white-skinned and male. Hair styles were short for men, longish for women. Hair colour was predominantly brunette for both genders. Facial hair for men, facial veils for women, turbans or other head coverings, were not represented. There were no skin gradations, no overweight or underweight images, no persons with disabilities of either gender. Women were portrayed in western dress, hairstyle, footwear, and choice of recreational pursuits. Doctors and lawyers, as well as construction workers, skiers, surfers, golfers, were primarily male, young, white, and fit. Women did not breastfeed, hold children, or menstruate; men did not cook, parent, or garden.

---

[23] *Tyler Schnoebelen, Do You Smile with Your Nose? Stylistic Variation in Twitter Emoticons,* LINGUISTICS WORKING PAPER 14, University of Pa. (2012), http://repository.upenn.edu/pwpl/vol18/iss2/14 (using tweets of American English speakers).

[24] "What does this emoji mean?" Jimmy Kimmel Live, YOUTUBE (15 April 2016), https://www.youtube.com/watch?v=NUMl6S_KNj4.

[25] Miller, Blissfully Happy, *supra* note 9. Researchers for the Minnesota study analyzed over 64 million tweets sent in 2016 over a two-week period using over 2,400 participants who interpreted emoji both in isolation and in various textual contexts. They concluded text can increase emoji ambiguity as much as it can decrease it and identified two reasons for that outcome: there was no provision in the test design for how to deal with sarcasm, and the tweet, confined to 140 characters, was found to be too short a model to offer detailed explanation.

[26] "Unicode® Emoji," UNICODE.ORG at http://www.unicode.org/emoji/.

Those restrictions, as pointed out by all those who did not see themselves mirrored in emoji choices, raises a fundamental question about the ethics of using emoji for social sorting: why is stereotypical representation so offensive? Could you not simply ride on the benefits of social assumptions that, because you are a woman, you excel at bake-offs and spelling bees, or because you are Asian you are a math whiz? What is so wrong with taking advantage? "If you can get people to believe you're a good source without actually being one, you get the benefits without having to put in the work."[27] Right 😳? 🥺? 😣?

Not so simple, argues Aaron Kay of Duke University: positive stereotypes are tied to negative ones. Believing that all black people excel at sports compliments their physical prowess but can undermine their "high-level cognitive side."[28] Duke, a neuropsychologist, points to the incremental effects of stereotypical thinking: once you buy into the idea that there is a connection between race and ability, "it's a slippery slope to the bad stuff: black people are lazy, Jewish people are cheap."[29] The belief that we know people based on what we know about their group, has another downside: it sets up members of that group for a variety of emotions from being a phony to feeling a failure.

Skin tone homogeneity was one of the first emoji features to be experimented with by the Consortium to address the lack of racial diversity.[30] Originally the default selection for representing human skin was the generic Bart Simpson yellow.[31] While skin tone choice for emoji is determined by the makers of our various devices (such as Apple for IOs phones) the Consortium determined that 'modifiers' like hair colour and skin shade should be as neutral as possible, so dark hair for the former and a generic, non-realistic skin tone for the latter.[32] By

---

[27] Julie Beck, *This Article Won't Change your Mind,* THE ATLANTIC (13 March 2017) https://www.theatlantic.com/science/archive/2017/03/this-article-wont-change-your-mind/519093/.
[28] *Id.*
[29] Kumari Devarajan, *'Strong' Black Woman? 'Smart' Asian Man? The Downside to Positive Stereotypes,* NPR (7 February 2018), https://www.npr.org/sections/codeswitch/2018/02/17/586181350/strong-black-woman-smart-asian-man-the-downside-to-positive-stereotypes.
[30] The Unicode Consortium specified the representation of text in all modern software products and standards. Prototypes of ideograms can be submitted to the Consortium for approval and, if accepted, are released as additions to the inventory a few times each year. Details on the submission process are set out on the Unicode Consortium website at http://www.unicode.org/consortium/consort.html.
[31] *The United States of Emoji,* NAT. GEO. (21 August 2015) https://blog.education.nationalgeographic.org/2015/08/21/the-united-states-of-emoji/.
[32] *Unicode Emoji*, Unicode® Technical Standard #51, UNICODE.ORG http://www.unicode.org/reports/tr51/. The Consortium assigns standardizing codes to its modifiers, so yellow skin tone is RGB #FFCC22. See further, Lucia Peters, *Why are Emoji Yellow? An Exploration of Default Options and Arbitrary Color Choices,* BUSTLE.COM, https://www.bustle.com/articles/76283-why-are-emoji-yellow-an-exploration-of-default-options-and-arbitrary-color-choices.

2015, as more and more images proposed to the Consortium diverged from that model, modifier codes were introduced that defaulted skin tint to six tones, and then to five, from 'pale white' to 'darkest brown', following the dermatologists' Fitzpatrick scale standard.[33] As well, inter-racial relationships (and more representative sexual relationships) were recognized by the Consortium, standardized in icons such as 👬 and 👬, after a 50,000 signature lobbying campaign by the dating application Tinder[34] to more accurately reflect its member composition.[35]

Gender was the next barrier addressed by those seeking diverse representation.[36] And deservedly so, as the demographics showed that the percentage of male and female population in the world is reaching equilibrium.[37] Of the online communicators in 2015, 92% were estimated to be emoji users.[38] Of those, approximately 78% are women; 60% are men.[39] So where were the voices advocating gender changes?

Mainstream media for one: "Where," asked a New York Times op-ed column, "[is] the fierce professor working her way to tenure?" And "How [is] there space for both a bento box and a single fried coconut shrimp and yet women [are] restricted to a smattering of tired, beauty-centric roles?"[40] See, as illustration, 💄, 💋, 💃, 💅, and 💇. Google and other software companies also made suggestions to the Consortium to promote gender equality by including women in their all-male 'professional' icons.[41] The new collection, although not exhaustive,

[33] The Fitzpatrick scale, or Fitzpatrick photo-typing scale, is widely recognized as a numerical classification tool for human skin tones. Developed in 1975 the system sets six skin types according to their reaction to ultraviolet rays.
[34] © Tinder Inc.
[35] Laura Byager, *The interracial couple is finally here following a Tinder campaign,* MASHABLE (2019), https://me.mashable.com/culture/2857/the-interracial-couple-emoji-is-finally-here-following-a-tin.
[36] *See, for example,* Megan Molteni, *Designing Genderless Emoji? It Takes More than Just Losing the Lipstick,* WIRED (30 June 2017), https://www.wired.com/story/designing-first-genderless-emoji/.
[37] *World Population,* COUNTRY METERS, https://countrymeters.info/en/World#population_clock. The world population in March 2019 was over 7.6 billion with 50.4% men and 49.6% women.
[38] B. Shaul, *Report: 92% of Online Consumers Use Emoji (Infographic)* ADWEEK (30 September 2015), http://www.adweek.com/digital/report-92-of-online-consumers-use-emojiinfographic/; *see also,* Selina Jeanne Sutton, *Emoji are becoming more inclusive, but not necessarily more representative,* PHYS. ORGANIZATION, (8 February 2019) https://phys.org/news/2019-02-emoji-inclusive-necessarily.html92% of online consumers use emoji.
[39] Leanna Garfield, *These emojis from Google show women in powerful careers instead of doing their nails,* BUS. INS. (13 May 2016) https://www.businessinsider.com/google-designers-create-empowering-emoji-representations-of-women-2016-5.
[40] Amy Butcher, *Emoji Feminism,* NYTIMES (12 March 2016), https://www.nytimes.com/2016/03/13/opinion/sunday/emoji-feminism.html.
[41] Rachel Been, et al., *Expanding Emoji Professions: Reducing Gender Inequality*, GOOGLE MEMO TO UNICODE.ORG, http://unicode.org/L2/L2016/16160-emoji-professions.pdf proclaiming : We believe an egalitarian, sensitive, and compelling representation of gender in emoji is extremely important."

marked a beginning of gender balanced emoji choices.[42] So software companies like Google, Apple, and Microsoft are now beginning to integrate these combined emoji into their operating systems," with the objective of moving consumer thinking beyond the binary when it comes to gender.[43]

Microsoft Inc. researcher Kate Miltner spent a few years researching why early emoji were developed by the Consortium and their partner, the ISO, with such a limited worldview.[44] She concluded that there was no overt indication of any aim to actively exclude certain prototypes; rather, the original emoji inventory emerged from a particular value system that promoted fixed images, thereby inadvertently marginalizing those who did not reflect that typology. "The Unicode Consortium's blind spot was their belief that technology is neutral," Miltner determined.[45] The basic error was perceiving that the emoji creation process was both nontechnical and apolitical and that belief systems of companies and individuals working with emoji can address a set norm that excludes anomalies. As summarized by Rotterdam internet researchers Roel Roscam Abbing et al., "[T]he very companies that provide the infrastructures for on-line expression…avoid engaging in the issue by employing an a-politicised and egalitarian discourse of diversity" with increasing ease and success. [46] As the concepts of neutrality and uniformity in representation were being challenged, the variety of ethical questions raised by emoji selection expanded. As Abbing et al. concluded, "In times of Black Life Matters…the emoji case shows how we might need to radically rethink what it means to say 'everyone'."[47]

The discussion around emoji stereotypes raises interesting ethical dilemmas for each of us. Should I choose an emoji similar to my own skin tone, for example, or to reflect that of the intended recipient? If the latter, will I be perceived as unable or unwilling to speak my mind in my own skin?[48] If an Asian person is making the choice, could selecting a white or dark skin tone be

---

[42] Andrew Cunningham, *Now all of your emoji can be either male or female,* ARS TECHNICA (14 July 2016), https://arstechnica.com/gadgets/2016/07/now-all-of-your-emoji-can-be-either-male-or-female/. The article states, "
[43] Butcher, Emoji Feminism, *supra* n 42.
[44] As reported in Olivia Solon, "Emoji diversity: how 'silly little faces' can make a big difference," THE GUARDIAN (7 November 2016), https://www.theguardian.com/technology/2016/nov/07/emoji-diversity-texting-emojicon-san-francisco. *See further,* S. Banet-Weiser & K. M. Miltner, *# MasculinitySoFragile: culture, structure, and networked misogyny.* FEM. MED. STUDIES (2015)1-4.
[45] Solon*, supra* note 44.
[46] Roel Roscam Abbing et al*., Executing Practices*" in MODIFYING THE UNIVERSAL,
https://roelof.info/~r/DB06_Executing_Practices_Modifiying_the_Universal_Pierrot_Roscam_Abbing_Snelting.pdf
[47] *Id.*
[48] Kumari Devarajan, *White Skin, Black Emojis?* NPR (21 March 2018), https://www.npr.org/sections/codeswitch/2018/03/21/425573955/white-skin-black-emojis.

interpreted as cultural appropriation?[49] And, if so, which culture is singled out for insult, the dark-skinned population, the Asian one, or white?[50] Would choosing a dark-skinned dancing woman play into historical stereotypes? Does it make a political statement and, if so, for which political constituency?[51] Was the choice of default yellow for a face emoji just continuing the status quo or revealing an entrenched intolerance of the new skin tone palette?[52]

Not only journalists and bloggers are exploring the need for difference in emoji's graphic representation. Academics have responded as well: researchers from the Institute for Language, Computation and Cognition School of Informatics at the University of Edinburgh took up the gauntlet in 2018, studying the use of skin tone modifiers on Twitter to see whether skin colour was used to negatively represent other user groups.[53] They conducted a quantitative analysis of skin modifiers for emoji chosen by dark-skinned users in their tweets and compared those to skin modifiers chosen by white skinned users and found that tones selected generally "represented the self, rather than the other."[54] The researchers could find no evidence of negative racial sentiment even where users preferred opposite-toned emoji; they concluded the introduction of skin tone choices seems to have met the goal of better representing human diversity. If true, software companies are now hearing the increasing demands by users to see their race, gender, age, culture, sexual preference – in a word their 'diversity' - reflected in the selections offered by such providers and platforms.[55]

Twitter has conducted independent research and maintained that "Fears that a range of skin colour options for the social media icons might be used inappropriately - in provoking antagonistic racial sentiment - have been unfounded since their introduction in 2015."[56]

---

[49] Megan Rose Dickey, *Thoughts on white people using dark-skinned emoji,* TECHCRUNCH (29 September 2017) https://techcrunch.clm/2017/1001/thoughts-on-white-people-using-dark-skinned-emoji/.

[50] Such a question raises the issue of 'false positives', or the documented lack of correlation between skin tone and cultural or racial make-up.

[51] Lauren Michele Jackson, *We Need to Talk About Digital Blackface in Reaction GIFs,* TEENVOGUE (2 August 2017), https://www.teenvogue.com/story/digital-blackface-reaction-gifs.

[52] Kumar Devarajan, *'Strong' Black Woman? 'Smart' Asian Man? The Downside To Positive Stereotypes,* NPR (17 February 2018), https://www.npr.org/sections/codeswitch/2018/02/17/586181350/strong-black-woman-smart-asian-man-the-downside-to-positive-stereotypes.

[53] Alexander Robertson et al., *Self-Representation on Twitter Using Emoji Skin Color Modifiers*, PROC. 12TH INT. AAAI CONF. WEB & SOC. MED. (ICWSM 2018), 680-683.

[54] *Id.*

[55] Solon, *supra* note 44.

[56] *Darker emoji skin tones promote diversity, Twitter study shows*, SCIENCE DAILY (11 April 2018) www.sciencedaily.com/releases/2018/04/180411111042.htm.

C. What Does Emoji Choice Reveal about Me?

Social media data sets are so abundant and freely accessible to researchers that they are the preferred quantitative source, given there are no ethical restrictions regarding user consent. There is a growing literature on how that data can be used to correlate emoji choice with personality type. For example, a team of AI researchers from the University of Rochester used computational methods to analyze emoji-laden tweets from over 71, 832 Twitter users. The objective was to determine whether user personality type might be a key determinant of emoji choice.[57] The research team chose five personality traits: openness, conscientiousness, extraversion, agreeableness, and neuroticism.[58] It found that users with low extraversion scores (ie, introverts) used emoji most frequently as did those showing neuroticism traits (such as emotional instability and lack of control). Those showing high agreeableness used more emoji than those registering low on that trait. In terms of specific emoji preferences, those displaying traits of openness and conscientiousness preferred positive emoji such as the sun, thumbs up, and a Winking Face; extroverts expanded those preferences to the thumbs up (both yellow and light skinned versions), clinking beer mugs, and both Winking Face and Grinning Face; those most agreeable showed a preference for images with hearts in a wide variety of styles; and those identified as possessing neuroticism selected predominantly negative images, mostly face emoji such as a Loudly Crying Face, Weary Face, Unamused Face, Upside Down Face, and a skull. Surprisingly those with the openness trait, usually associated with a willingness to accept new things, used the skull icon more than other emoji. Two other emoji are of interest: the See-No-Evil Monkey Face was selected frequently by the conscientious and extroverted, and the pistol was chosen by those with the openness trait and those with neurotic tendencies.[59] The ethical question raised by this study is what use will be made by such personality predictors by private social media companies.

A similar study, published in 2017, found sufficient correlation between preferred emoji use and personality type to suggest personality testing could be accomplished solely using emoji. Marengo et al., used the Big Five personality questionnaire to study 234 adults with a mean age of

---

[57] WeiJian Li et al., *Mining the Relationship between Emoji Usage Patterns and Personality*, PROC. 12TH INT. AAAI CONF. WEB & SOC. MED. (2018). Tweets were collected from from March 2016 to June 2016.
[58] O.P John & S. Srivastava, *The big five trait taxonomy: History, measurement, and theoretical perspectives,* HANDBOOK OF PERSONALITY: THEORY AND RESEARCH (1999)102–138.
[59] WeiJian Li et al., *supra* note 57.

24.7 years and found that emoji might be employed to develop a language-free assessment tool for personality.[60]

Today, advertisers are developing ads based on the core concept explored by those studies, that emoji use is a strong indicator of personality type. Twitter's new emoji tracking tool builds on that: it enables advertisers to monitor how and when users post emoji, then uses that data to determine people's emotional states. When reading those feelings, companies can deliver closely tailored ads that match users' age, gender, and "real-time emotions."[61] Ambiguous emoji do not impair this process because we are told advertisers can use artificial intelligence (AI) to de-code the mood of such graphic images to decipher whether an emoji is used in a positive, negative, or neutral context, and then to produce a corresponding advertisement to appear on our devices.

Social media companies have a marketing goldmine in the emotions, sentiments and affect offered by the online messages of their subscribers. They can be sifted for indicators of mood, dissatisfaction, preferences and consumer needs. It is a complicated science to gain an understanding of the nuanced range of possible emotions that render us vulnerable to commercial messaging. For social media companies, that knowledge is the brass ring of marketing prediction.[62] Take the basic challenge of defining and distinguishing between four interrelated concepts that drive us online to communicate to friends in the first place: *affect* (the conscious subjective aspect of an emotion); *feeling* (unreasoned opinion or belief); *emotion* (a conscious mental subjective reaction); and *sentiment* (an attitude or judgment prompted by a feeling).[63] Those various types of user response to online stimuli quadruple the ways that Twitter or Facebook can get to know our state of mind and heart. While social media companies couch their personalization message in terms of 'service', 'community' and, for Facebook, 'friends', commodification of our personal data for advertisers is the ultimate destination. [64]

---

[60] D. Marengo, et al., *Assessing personality using emoji: An exploratory study*, 112 PERS. & INDIV. DIFF. (2017) 74–78.

[61] Alesandra Cardinale, *Why advertisers are tracking your emojis,* VOX (12 December 2018), https://www.vox.com/videos/2018/12/12/18127379/advertisers-tracking-emojis-ads.

[62] *See, for example,* ANDREW MCSTAY, EMOTIONAL AI: THE RISE OF EMPATHIC MEDIA (2018).

[63] Myriam Munezero et al., *Are They Different: Affect, Feeling, Emotion, Sentiment, and Opinion,* 5:2 IEEE TRANS. AFF. COMP., 101-111 (April 2014), https://www.researchgate.net/publication/264387673_Are_They_Different_Affect_Feeling_Emotion_Sentiment_and_Opinion_Detection_in_Text.

[64] Ronald Wahome, *This Is How Twitter Sees The World: Sentiment Analysis Part One,* MEDIUM (7 September 2018) https://towardsdatascience.com/the-real-world-as-seen-on-twitter-sentiment-analysis-part-one-5ac2d06b63fb, reporting there were over 330 million active monthly Twitter users as of February 2018.

Facebook is a fascinating case study in that trend as it has shown a focused persistence over the past decade in accessing and analyzing our online behaviors. One 2014 study[65] was heavily criticized for manipulating nearly 700,000 users' news feeds to see whether it would affect their emotions, without first obtaining their "informed consent" as required by ethical guidelines when humans are used as research subjects.[66] Most specifically, the experiment hid a percentage of emotional words from peoples' news feeds, without their knowledge, to test what effect that had on the status or "Likes" that they posted as reaction to news stories.[67] The researchers read negative emotions in those postings and concluded that emotional contagion, or influence, can occur without direct interaction between people. Put simply, positive postings by one's friends can cause a person to feel "negative or left out."[68] A similar study from Buffalo looks to "our relationship with these corporations and these social networking platforms," and concludes, "They do not have our best interests in mind."[69] Merely logging onto these platforms increases the probability of observing exchanges among our friends in which we are excluded. Participants with the tendency to devote cognitive resources to understanding their social networks, what the study authors call "network attention" were particularly sensitive to those feelings of exclusion.[70]

The researchers found particularly alarming the fact that friends' posts were not aimed at social exclusion; users were not callously manipulating their friends' emotions, but Facebook was.[71] Today's high emoji use, with its high social valence, could add considerably to those feelings of exclusion.

---

[65] Adam Kramer et al., *Experimental evidence of massive-scale emotional contagion through social networks,* 24 PROC. NAT. ACAD. SCI 111 (2014) 8788-8790.

[66] As required in US by the federal Common Rules and US federal policy for the protection of human subjects. *See further* Charles Arthur, *Facebook emotion study breached ethical guidelines, researchers say,*" THE GUARDIAN (30 June 2014), https://www.theguardian.com/technology/2014/jun/30/facebook-emotion-study-breached-ethical-guidelines-researchers-say; *see also* Alexander M. Capron, *Where did Informed Consent for Research Come From?* J. LAW, MED. & ETHICS, (27 March 2018) https://doi.org/10.1177/1073110518766004.

[67] Jillian D'Onfro, *Facebook Researcher Responds to Backlash Against 'Creepy' Mood Manipulation Study,* BUS. INS. (28 June 2014), https://www.businessinsider.com/adam-kramer-facebook-mood-manipulation-2014-6.

[68] Sam Moshkovech, *Report: Facebook helped advertisers target teens who feel "worthless,"* ARS TECH. (1 May 2017), https://arstechnica.com/information-technology/2017/05/facebook-helped-advertisers-target-teens-who-feel-worthless/.

[69] Jessica Covert & Michael Stefanone, *Does Rejection Still Hurt? Examining the Effects of Network Attention and Exposure to Online Social Exclusion,* SOC. SCI. COMP. REV. (2018), https://doi.org/10.1177/0894439318795128.

[70] *Id.* The 194 randomly chosen participants were exposed to written scenarios describing hypothetical online conversations between their close friends in which they were excluded or included. Results suggest that participants in the excluded condition experienced the most negative and least positive emotional responses. (abstract)

[71] Bert Gambini, *Your Facebook friends don't mean it, but they're likely hurting you daily,* NEWS CENTER, U. BUFFALO (26 September 2018), http://www.buffalo.edu/news/releases/2018/09/034.html.

In 2017, news broke of yet another emotion study by Facebook, this time specifically targeting the young. A report of that study by two Australian Facebook staffers indicated how the company promotes advertising campaigns "that exploit Facebook users' emotional states" – some as young as 14 years of age.[72] Always in search of more granular science on emotional triggers and needs, Facebook found ways to mine online behaviours for consumers' behavioural patterns, such as this observation: "earlier in the week teens post more about 'anticipatory emotions' and 'building confidence'" compared to weekend teen posts containing "more 'reflective emotions' and 'achievement broadcasting.'"[73]

In that study, like the one in 2014, Facebook was relying on the psychological phenomenon of emotional contagion, a behaviour that can foster connectedness among subscribers and assist social media companies in reading the emotional cohesiveness of the group. First identified in the 1990s, the social phenomenon describes the act of having one's emotions and related behaviors directly trigger similar emotions and behaviors in other people.[74] In a face-to-face exchange similar affect can be achieved through automatic mimicry and synchronization of our expressions, vocalizations, postures and movements with those of another person. Facebook experiments are routinely attempting those results, particularly with emotion studies.

The controversy those studies have created can be seen in Facebook's 2016 expansion of the 'Like' emoji to six in number to give subscribers more options. Under growing pressure from users over the past decade to introduce a 'Dislike' response or to provide a more granular reaction to another person's news where 'Like' would be inappropriate - such as job losses, death of a loved one, or a natural disaster – Facebook designers introduced the following emoji:
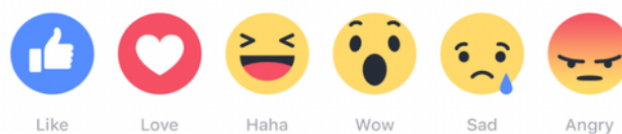
Facebook's Expansion of the 'Like' function in 2016 (Facebook)[75]

[72] Moshkovech, Report *supra* note 68.
[73] *Id.*
[74] Elaine Hatfield et al*., Emotional contagion*, 2:3 CURR. DIR. PSYCH. SCI., 96–99.
[75] 'Reaction' selections have now expanded to include 'love', 'haha', 'wow', 'sad', and 'angry.'

Complaints early on focused on Facebook's restriction of the emotional reactions to six out of the 20 emoji suggested by subscribers. Most controversial was the omission of common negative emotions such as disgust, embarrassment, and contempt.[76]

Facebook countered that it wanted to avoid negative options. The expression of sarcasm could be considered a negative signal but, since 2015, two emoji have been suggested for use as a sarcastic indicator or text modifier:[77] the Upside Down Face emoji (🙃) was created to alleviate the persistent interpretation issues with sarcastic text,[78] as well as the Eye Roll Face emoji[79] (🙄) and a sarcasm font for text (*ABCDEFGabcdefg*).[80] Still, sarcasm is proving to be one of the most elusive sentiments to identify primarily because it is a form of figurative language (like dry wit or droll commentary) and hence of a slightly more sophisticated nature, where one typically says or writes the opposite of what one means.[81]

In 2017 researchers at the MIT Media Lab developed a program called Deepmoji to train algorithms to predict which emoji would be selected by the author to accompany a particular message. AI decisions were based on whether the tone was intended as sad, angry, humorous, and so on.[82] The algorithm that had been pre-trained using emoji was far better at detecting sarcasm than the algorithm that had not. In addition, the researchers recruited volunteers who proved to be *less* proficient at spotting sarcasm and other emotions on Twitter than their algorithmic counterparts. As MIT associate professor Iyad Rahwan explains, "Because we can't use intonation in our voice or body language to contextualize what we are saying, emoji are the way we do it online."[83]

---

[76] Amana Hess, *Facebook Reactions Are Not Wow,* SLATE (25 February 2016) *https://slate.com/technology/2016/02/facebook-reactions-are-not-wow.html,* as attributed to Dacher Keltner, professor of psychology at the University of California, Berkeley.

[77] D. Thompson & R. Filik, *Sarcasm in written communication: emoticons are efficient markers of intention*, 21:2 J. COMP. MEDIAT. COMM. 105–120 (2016).

[78] "Upside-Down Face" was approved as part of Unicode 8.0 in 2015 and added to Emoji 1.0 in 2015.

[79] Ashley Fetters, *In Praise of the Eye-Roll Emoji, the Sarcasm Indicator We've Always Needed*, GQ (4 April 2016), https://www.gq.com/story/three-years-for-the-eye-roll-emoji.

[80] Drew Olanoff, *Finally Sarcasm has a voice in print with its own font,* THE NEXT WEB (12 December 2011) https://thenextweb.com/dd/2011/12/12/finally-sarcasm-has-a-voice-in-print-with-its-own-font/.

[81] Shereen Oraby, et al., *Are you serious? Rhetorical Questions and Sarcasm in Social Media Dialog*, Proc. SIGDIAL 2017 CONF. (15-17 August 2017) 310–319, Saarbrücken, Germany, https://aclweb.org/anthology/W17-5537.

[82] Will Knight, *An Algorithm Trained on Emoji Knows When You're Being Sarcastic on Twitter,* MIT TECH. REV. (3 August 2017), https://www.technologyreview.com/s/608387/an-algorithm-trained-on-emoji-knows-when-youre-being-sarcastic-on-twitter/

[83] It was 82 percent accurate at identifying sarcasm correctly, compared with an average score of 76 percent for the human volunteers. *See further,* James Walker, *Emoji analysis helps AI detect sarcasm in tweets,* DIG. J. (7 August

Those machine proficiencies at reading the intent and sentiment of emoji serves many benign functions: tracking attitudes toward brands and products, identifying signals and trends in the financial markets, helping computers automatically detect and quash online abuse and hate speech, aiding academics in understanding how information and influence flows through the network, and refining human-to-machine communication.[84]

Irony presents another form of figurative language that poses similar issues about how we process emoji cognitively.[85] In a recent study at the University of Illinois at Urbana, linguists were interested in whether we resort to the same neural processes in using emoji as when we use word-generated irony.[86] Correlating emoji use to brain receptors, researchers Benjamin Weissman and Darren Tanner found that our brains process ironic emoji in the same way as other ironic expression. The research team had participants read sentences that ended in either a congruent, incongruent, or ironic (Winking Face) emoji. Results across three experiments clearly demonstrated that participants tended to treat the emoji as a marker of irony.[87] Moreover, unexpected emoji (both mismatch and ironic emoji) elicited "frontal late positivities," which neural processing uses with unpredicted words in context. The authors suggest those results are the first to identify how linguistically-relevant icons are processed in real-time at the neural level, and specifically draw parallels between the processing of word- and emoji-induced irony.

The task of emotion detection is particularly challenging because it involves a large number of categories of emotions for classification, with no fixed number or types of emotions. The task is further complicated by the permanent proliferation of so-called internet trolls and the vast

---

2017), http://www.digitaljournal.com/tech-and-science/technology/emoji-analysis-helps-ai-detect-sarcasm-in-tweets/article/499431.

[84] Will Knight, *An Algorithm Trained on Emoji Knows When You're Being Sarcastic on Twitter,* TECH. REV. (3 August 2017), https://www.technologyreview.com/s/608387/an-algorithm-trained-on-emoji-knows-when-youre-being-sarcastic-on-twitter/.

[85] *Id.* Included are indirect questions, idioms, irony, metaphors, similes, hyperbole, understatement, and rhetorical questions.

[86] Benjamin Weissman & Darren Tanner, *A strong wink between verbal and emoji-based irony: How the brain processes ironic emojis during language comprehension,* PLoS ONE (15 August 2018) https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0201727.

[87] *See further,* K. D. Federmeier, et al., *Multiple effects of sentential constraint on word processing,* 1146 BRAIN RES. (2007) 75–84, where the authors explain that "frontal late positivities arise for plausible but unexpected words in highly constraining contexts." In the Weissman and Tanner experiment, responses to behavioral comprehension questions were studied.

number of platforms in which they operate. It therefore becomes useful to devise systems that can automatically detect sarcastic intentions in texts and emoji.[88]

One research project from eastern Europe introduces an Emoji Sentiment Ranking, offering the first emoji sentiment lexicon of 751 emojis. It was constructed from over 1.6 million tweets in 13 European languages, manually annotated for sentiment by 83 human annotators.[89] The purpose of such a ranking system is to provide an automated reference to assign each emoji a sentiment value of negative, neutral, or positive. Using quantitative methodology, the Novak project determined, for example, that the thumbs down sign (👎) indicates negative sentiment with high confidence; the flushed face (😳) is neutral, a balance of negative and positive sentiments; and the chocolate bar (🍫) is positive or, more accurately according to Novak's ranking, just not negative.[90]

The findings of that study included the following: most of the emoji used in the data set were positive, especially the most popular ones; the sentiment distribution of the tweets with and without emoji was significantly different; emoji tended to be placed at the end of the tweets; and the negativity and positivity increased with the distance, whereas the neutrality decreased. This means that more emotionally loaded emoji, either negative or positive, tend to occur towards the end of the tweets.[91] The team observed no significant differences in the emoji rankings between the 13 languages. The authors propose their Emoji Sentiment Ranking as a prototype for automated sentiment analysis. When contemplating future work, the researchers predict the interplay between emoji and text will be one of the most promising directions.[92]

II.   Landmines and Limitations in Expanding Emoji Prototypes

A. The Myth of Technological Neutrality

AI increasingly assists in life altering decisions such as who gets a mortgage, who is hired or fired, and "whether we are good credit risks…or deadbeats, shirkers, menaces, and 'wastes of

---

[88] Shereen Oraby, et al., *Creating and characterizing a diverse corpus of sarcasm in dialogue.*, 17TH ANN. MTG. SPEC. INT. GRP DISC. & DIAL. (SIGDIAL), (2016).
[89] Petra Kralj Novak, Sentiment of emojis, PLOS.ORG (17 December 2015) https://journals. plos.org/plosone/article?id=10.1371/journal.pone.0144296.
[90] Images taken from Emojipedia website, Twitter version.
[91] The original statement is: "Their sentiment polarity increases with distance."
[92] Id. *See further* AMEETA AGRAWAL, ENRICHING AFFECT ANALYSIS THROUGH EMOTION AND SARCASM DETECTION, PhD Dissertation, Department of Electrical Engineering and Computer Science, York University Toronto (2018), https://yorkspace.library.yorku.ca/xmlui/bitstream/handle/10315/34985/Agrawal_Ameeta_2018_PhD.pdf?sequence =2&isAllowed=y.

time.'"[93] As seen above, AI is integrally involved in the world of emoji. We know, for example, that the Apple 'auto-suggestion' feature prompts particular emoji selections when we type particular words.[94] AI also assists Google in converting our selfies into personalized emoji. So while selfies use photographs to create "idealizations of yourself," emoji are fashioned around the emotion factor because they show more "distillations and exaggerations of how we feel."[95] Once again, we discover that social media giants continue to probe for our emotional affect, but now as generated not by their researchers but through our own choice of representative features to convey the way we wish others to see us.

Machine learning also assists us to project just the right emotional reaction to what our friends are messaging to us, as can be read on our emoji faces. By using AI to create our own custom catalogue of responses to friends' messages, we *become* our own auto-suggestions. Such features have important uses in gaming and virtual reality software.

The technological landmine in this innovation is that we feed our personal data, including our facial image, into the bank of data that can be put to unlimited, undisclosed, uses.[96] It also 'codifies' emoji into our messaging, rather than using them as mood or meaning enhancers. The following illustrates the difference AI adds: now the message "Did you see the game last night? 🔥🏀💯🍻😜🔥" can be replaced with "Did you 👀 the 🏀 last night?" with the emoji built in to the text rather than merely an emotional add-on or 'signifier'.[97] The essence of that shift is to expand the role of emoji so they become part of the textual alphabet, more integral to our communication of meaning. As adept reservoirs of our personal data, they also become privacy risks.

Another potential landmine introduced by AI has been revealed by one study that found simple computational neural networks can be trained to detect melanoma from images, to better

---

[93] Danielle Keats Citron & Frank Pasquale, *The Scored Society: Due Process for Automated Predictions,* 89:1, WASH. L. REV. (2014) 2-32. *See further* Frank Pasquale, *Restoring Transparency to Automated Authority*, 9 J. TELECOMM. & HIGH TECH. L. 235–36 (2011).

[94] Edwina Oliver, *Emojis in Law: Making a Mess of Messaging,* THOMSON REUTERS (4 May 2018) http://insight.thomsonreuters.com.au/posts/emojis-in-law.

[95] Cliff Kuang, *Exclusive: Google's New Ai Tool Turns Your Selfies into Emoji,* FAST COMPANY (11 May 2017) https://www.fastcompany.com/90124964/exclusive-new-google-tool-uses-ai-to-create-custom-emoji-of-you-from-a-selfie.

[96] Similar AI capabilities are offered by San Francisco-based start-up Mirror AI as well as the latest Samsung Galaxy phone.

[97] Cara Rose DeFabio and Michael Rosen, *The problem with Apple's new emoji software, and how AI could solve it,* SPLINTERNEWS.COM (17 June 2016), https://splinternews.com/the-problem-with-apples-new-emoji-software-and-how-ai-1793857615.

identify dark skin tones with accuracies as high as human experts.[98] Such algorithmic capacity is both technologically impressive and ethically worrisome; it has recently been characterized as sufficiently toxic when offered by social media companies to qualify as "the plutonium of AI."[99]

That is because technology isn't unbiased. It is built by people making small programming decisions that create prejudices that are harder to remove once embedded in code. When we feed data that reflects our prejudices to machines, the latter mimics those preferences – from anti-Semitic chatbots to racially biased software. Several examples emerge from recent experimental uses of AI. For example, an AI policing program that can predict hotspots where crime might occur in future has been shown to become stuck in a feedback loop that results in over-policing of black and brown-dominated neighbourhoods.[100] The program was reportedly learning from previous crime reports. Such errors can be "especially nefarious" because police can say: "We're not being biased, we're just doing what the math tells us."[101] Public perception might be that the algorithms are impartial when, in fact, they are recycling programmer bias.

The program, called COMPAS [102] risk assessment application, was designed to assist judicial decisions regarding terms of bail, sentencing and parole. One analysis of the results shows black defendants are twice as likely as white defendants to be labelled as high risk, thereby replicating systemic social biases.[103] In a 2016 study of automated risk assessments by COMPAS developer Northpointe, Inc., AI was used to predict future criminal activity of over 7,000 arrestees in Broward County, Florida. Scores were found to be "remarkably unreliable" in forecasting violent

---

[98] Andre Esteva et al., *Dermatologist-level classification of skin cancer with deep neural networks*, NATURE 542: 7639, 115–118 (2017).

[99] Luke Stark, *Facial Recognition is the plutonium of AI,* 25:3 XRDS: CROSSROADS (Spring 2019) doi: 10.1145/3313129, commenting that facial recognition is "dangerous, racializing, and has few legitimate uses and recommending "regulation and control on par with nuclear waste."

[100] Stephen Buranyi, *Rise of the racist robots – how AI is learning all our worst impulses,* THE GUARDIAN (8 August 2017, https://www.theguardian.com/inequality/2017/aug/08/rise-of-the-racist-robots-how-ai-is-learning-all-our-worst-impulses, reporting results from a study of a predictive policing AI program by Human Rights Data Analysis Group researcher Kristian Lum.

[101] *Id.* Examples noted by author Buranyi include *"*a Google image recognition program [that] labelled the faces of several black people as gorillas; a LinkedIn advertising program [that] showed a preference for male names in searches, and a Microsoft chatbot called Tay [that] spent a day learning from Twitter and began spouting anti-Semitic messages." For a more detailed examination of AI in policing*, see* Chelsea Barabas, *Beyond Bias; Re-imagining the Terms of 'Ethical AI' in Criminal Law,*

[102] Correctional Offender Management Profiling for Alternative Sanctions, produced by Northpointe, Inc.

[103] Alexandra Wood & Micah Altman, *Ocasio-Cortez is right, algorithms are biased – but we can make them fairer,* THE HILL (13 February 2019) https://thehill.com/opinion/technology/429883-ocasio-cortez-is-right-algorithms-are-biased-but-we-can-make-them-fairer; see further Deborah Raji, *That's not fair! Why we need to study machine learning fairness, even in an increasingly unfair world, i*25:3 XRDS: CROSSROADS (Spring 2019) 44-48, DOI: 10.1145/3313127.

crime: only 20 percent of the people so identified by algorithms actually went on to commit such crimes.[104] When studying the future propensity for misdemeanors, the researchers found that "the algorithm was somewhat more accurate than a coin flip."[105]

When researchers Anguin et al. analysed data provided by COMPAS, they noted, in spite of a claim that data indicating race and ethnicity were excluded, that the training data used to build the system originated from "a criminal justice system plagued by racial disparities," and other factors "like income [that] act as proxies for race and lead to discriminatory results."[106] As Harvard researchers Effy Vayena et al. found, "blindness to race often does not mitigate bias — and may make algorithmic decisions worse."[107] American Congress representative Alexandria Ocasio-Cortez suggests that algorithms just automate human predilections unless we correct them. She warns that algorithms "are just automated assumptions. And if you don't fix the bias, then you are just automating the bias."[108] When that happens, data have the potential to create unintended and even unforeseen harmful effects, including contributions to systematic inequality of opportunity for socially disadvantaged individuals and communities.

It takes public vigilance to hold technology companies accountable and push back until those elements are fixed sufficiently to make lasting change. Blogger Samantha Zucker is a case in point: she recently dissected the technology-based bug in Twitter messages that caused more characters to be assigned to female emoji, thereby using up the 140-character limit more quickly.[109] "It turns out more female emojis are being 'taxed' by requiring more characters," Zucker noted. She insisted it is not always a distinction between male and female, as farmers and judges were a more expensive emoji choice as well, but she could clearly perceive a pattern. Race was also involved. Zucker concluded, "there's an overall tax on emoji having *any* race on Twitter. When I

---

[104] Julia Anguin et al., *Machine Bias*, PRO PUBLICA (23 MAY 2016), https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing.

[105] *Id*. For a closer review of the study results, *see* Jeff Larson et al., *How We Analyzed the COMPAS Recidivism Algorithm,* PROPUBLICA (23 May 2016), concluding that "Even when controlling for prior crimes, future recidivism, age, and gender, black defendants were 45 percent more likely to be assigned higher risk scores than white defendants."

[106] Anguin et al., *supra* note 104; Larson et al., *supra* note 105.

[107] Effy Vayena et al., *A Harm-Reduction Framework for Algorithmic Fairness,* BERKMAN KLEIN CENTER (3 August 2018) https://cyber.harvard.edu/publication/2018/harm-reduction-framework-algorithmic-fairness.

[108] As reported in cited in Wood & Altman, *supra* note 103.

[109] Samantha Zucker, *Twitter's Discriminating Emojis, And What It Shows About Tech,* MEDIUM.COM (8 August 2017) https://medium.com/@schwam_z/twitters-discriminating-emojis-and-what-it-shows-about-tech-ed702a9763bc, noting Twitter was assigning more character use to female characters but changed their emoji policy on 10/11/2018 to address this issue.

tested this with the other skin tones, all paid a price for using a color, regardless of the color selected."[110] Like Zucker, we need to call tech giants on their marketing aggressions and gender assumptions that assume our ignorance will silence us.

B. Politics and *Politesse*

The pending approval of a menstruation emoji by the Consortium in early 2019 has raised an important debate around which constituency the organization represents in the standardization of its icons.[111] In other words, when do ethical concerns of inclusion and equality, as seen in the release of accessibility emoji ( )[112] swing into the optics of the politically charged, as suggested by climate change emoji ( ),[113] opposition to interracial couples ( ), child abuse icons ( ), and social welfare messaging ( )?[114] Public advocacy has great influence here: the withdrawal of a rifle emoji ( ) mere days before its release by the Consortium raised questions about the possible role of political advocacy in that decision.[115] Such power raises the ethical question: with the Consortium's acceptance of a "drop of blood" menstruation emoji ( ), can a female genital mutilation icon be far behind?[116]

The Consortium has reportedly acquired the services of a gatekeeper to provide guidance with the notable surge in novel emoji proposals representing such politically charged concepts as

---

[110] *Id.*

[111] Malaka Gharib, *Why Period Activists Think the 'Drop of Blood' Emoji is a Huge Win*, NPR.ORG (8 February 2019) https://www.npr.org/sections/goatsandsoda/2019/02/08/692481425/why-period-activists-think-the-drop-of-blood-emoji-is-a-huge-win.

[112] Apple Inc. *Proposal for New Accessibility Emoji* UNICODE.ORG (March 2018) https://www.unicode.org/L2/L2018/18080-accessibility-emoji.pdf.

[113] These images are *not* the creation of Unicode Consortium, but rather of the Climoji website: *see further* Sidney Pereira, *Fee Like the World is Ending? Climate Change Emoji Are Here to Help,* NEWSWEEK, (12 January 2018), https://www.newsweek.com/feel-world-ending-climate-change-emojis-here-help-779586; *see also* Allyson Chiu, *Anxious about climate change? There's a cow-farting-methane emoji for that,* WASH. POST (30 January 2018) https://www.washingtonpost.com/news/energy-environment/wp/2018/01/30/anxious-about-climate-change-theres-a-cow-farting-methane-emoji-for-that/?utm_term=.472b5f4e98f0.

[114] Megan Logan, *These Emoji make it easier for kids to 'talk' about abuse,* WIRED (2 June 2015) https://www.wired.com/2015/06/abused-emoji/.

[115] Lauren O'Neill, *Apple stops Unicode from releasing a rifle emoji, gun advocates get mad,* CBC.CA (22 June 2016), https://www.cbc.ca/news/trending/rifle-emoji-dropped-unicode-9-0-update-apple-microsoft-1.3645884.

[116] *See, for example,* Christina Julios, FEMALE GENITAL MUTILATION AND SOCIAL MEDIA, ROUTLEDGE (2018); and Allyson Chiu, *Anxious about climate change? There's a cow-farting-methane emoji for that,* WASH. POST (30 January 2018) https://www.washingtonpost.com/news/energy-environment/wp/2018/01/30/anxious-about-climate-change-theres-a-cow-farting-methane-emoji-for-that/?utm_term=.472b5f4e98f0.

suffering depression, experiencing bullying, being exposed to physical abuse,[117] experiencing autism,[118] talking about suicide,[119] addressing self-harm,[120] and venturing into such cultural minefields as whether to accept an emoji family with same-gendered parents, genderless members,[121] or with one male husband and four wives.[122] Although parameters for acceptance as stated on the Consortium website are quite specific (no deities, logos, or specific persons living, dead, or fictional), decision-making requires "political and cultural finesse."[123] That task falls to "twelve dues-paying members with full voting rights," including representatives from Oracle, IBM, Microsoft, Adobe, Apple, Google, Facebook, Shopify, Netflix, the German software company SAP, the Chinese telecom company Huawei, and the government of Oman.[124]

An important feature of the widening of the emoji palette of the Consortium[125] is the growth in joint proposals by the corporate sector and charitable organizations.[126] For example, Apple has partnered with numerous non-profit organizations on the submission of disability-friendly emoji;[127] as well, a Swedish non-profit children's rights organization BRIS has joined forces with private interests to produce the Abused Emoji proposal.[128]

Finally, what to do with emoji designs that are creepy 😱 to some, rude 🤮 to others, or that carry more than a whiff of impropriety 💩 so offensive to more refined sensibilities?

---

[117] Logan, *supra* note 114.

[118] Associated Press, *Google Glass App helps kids with Autism 'See' Emotions,* NBC NEWS (23 June 2016) *https://www.nbcnews.com/health/kids-health/google-glass-app-helps-kids-autism-see-emotions-n597641,* reporting that "When the device's camera detects an emotion such as happiness or sadness, Julian sees the word "happy" or "sad" - or a corresponding "emoji" - flash on the glass display."

[119] @twittersafety, *Working Together to Prevent Suicide,* TWITTER BLOG (10 September 2018), *https://blog.twitter.com/official/en_us/topics/company/2018/wspd2018.html,* mentioning the launching of a special emoji in the shape of an orange and yellow ribbon in partnership with the International Association for Suicide Prevention (IASP).

[120] 🙌 .

[121] Molteni, *supra* note 36.

[122] Virginia Heffernan, *The Delicate Art of Creating new emoji,* WIRED (28 June 2018) https://www.wired.com/story/the-delicate-art-of-creating-new-emoji/.

[123] *Id.*

[124] *Id.* UC Berkeley, as well as the governments of India and Bangladesh, appear to have lower-level memberships.

[125] Matthew S. Schwartz**,** *Interracial Couples and Disability-Friendly Emoji Coming Soon to Smartphones,* NPR.ORG (7 February 2019), https://www.npr.org/2019/02/07/692260599/interracial-couples-and-disability-friendly-emojis-coming-soon-to-smartphones.

[126] *Id.*

[127] Apple Inc. Proposal, *supra* note 102, that includes the following attribution: "Developed in collaboration with internationally respected community organizations such as American Council of the Blind, the Cerebral Palsy Foundation and the National Association of the Deaf."

[128] Logan, *supra* n 114.

According to "shadowy emoji overlord" Mark E. Davis, co-founder and President of the Consortium, the original intent was to keep emoji as neutral and limited in number as possible.[129] A broader mandate has evolved, however. "Our goal is to make sure that all of the text on computers for every language in the world is represented."[130] In that pursuit the highest usage, not political or cultural import, is the key determinant.

C. The Privacy and Interpretative Perils of Facial Recognition

It was announced in 2017 that whenever we "smile, frown, or sneer" at the Apple iPhone X, the phone's facial sensors can create expressive 3D emoji to mimic our own faces.[131] The personal privacy implications are alarming. The hardware behind those "animoji" track over 50 muscle movements in our brows, cheeks, lips, jaws, and mouths. When added together, the movement of these different facial features into frowns or dimples gives the phone the facial data it needs to create our unique image.[132] Some users might willingly submit to such profiling and data brokering of our every facial move for the convenience and entertainment value it offers. Others would shun the personal intrusion and interpretative bias inherent in such representation. Instrumental in bringing AI capabilities to that level was the 2016 Apple purchase of Emotient, a company that had marketed to advertisers and retailers its sophisticated algorithms that could scan subtle facial changes in customers and determine the associated emotions.[133] The rationale was that AI technology offered better customer service because it could accurately read human emotions in customers' faces to determine whether they were satisfied with the service they received despite what they were saying.[134]

Other facial recognition developers are working with brands and retailers on such predictive tasks as the prevention of shoplifting in real time and the deciphering of shoppers' non-

---

[129] Victor Luckerson, *Meet the 63-Year-Old in Charge of Approving New Emojis,* TIME (2 March 2016), http://time.com/4244795/emoji-consortium-mark-davis/.

[130] NPR Staff, *Who Decides Which Emojis Get the Thumbs Up?* NPR (25 October 2015), https://www.npr.org/sections/alltechconsidered/2015/10/25/451642332/who-decides-which-emojis-get-the-thumbs-up.

[131] Mark Kaufman, *This iPhone X emoji innovation will copy your facial expressions,* MASHABLE (12 September 2017), https://mashable.com/2017/09/12/animoji-iphonex-face-sensing-tech/#pVMUuiNXriqU.

[132] Rolf Winkler et al., *Apple Buys Artificial-Intelligence Startup Emotient,* WSJ (7 January 2016) ttps://www.wsj.com/articles/apple-buys-artificial-intelligence-startup-emotient-1452188715.

[133] Lia Kokalitcheva, *Apple Acquires Startup That Reads Emotions from Facial Expressions*, FORTUNE (7 January 2016) http://fortune.com/2016/01/07/apple-emotient-acquisition/.

[134] Stacey Higginbothom, *Computers That Understand Your Emotions Are Coming Next Year,* FORTUNE (23 December 2015) http://fortune.com/2015/12/23/computers-understand-emotions/.

verbal responses to online displays of merchandise.[135] From the developer's perspective, "[t]he idea is to help humans interact with computers that are otherwise oblivious to certain subtleties" involved in reading a person's expressions. [136] From the shopper's view, prediction by algorithm presents a significant intrusion into private actions and unquantifiable risks that their motives will be misread or embellished.

In 2018, Apple expanded on animoji with the creation of memoji, a personal avatar amalgam of camera images of the user on the iOS 12 phone that adds our idiosyncratic facial expressions in human form, rather than animal or other emoji-based animoji. With this personalization feature it is us who actively design an image in our likeness to represent not only our skin tone, hairstyle and eye colour, but lip and nose shape, features that more closely identify our genetic and racial makeup.

Once again, users' responses are mixed. While the biometrics of memoji is exciting in its possibilities, it raises legal and ethical concerns if the technology does not perform as anticipated. In a retail store for example, emotion-reading computers could be used to identify nervous shoppers and use that information, prematurely, to signal a propensity for theft or violence.[137] Similarly facial recognition software could be installed for use in moving vehicles to detect a driver's eye movement from the road onto a cell phone or radio dial.[138] Such information could As early as 2013 it was revealed that law enforcement in San Diego were using such technology developed by the military to "indiscriminately" build a photo data profile of those with a propensity for crimes, without solid proof and without their permission.[139]

While such experiments foment legal and ethical debates about privacy creepiness and bias risks, they also an impressive step towards the power of emoji to clarify puns, inside jokes,

---

[135] Affectiva, for example, whose business brand is: "human perception AI understands all things human."

[136] Higginbothom, *supra* note 134.

[137] Jeff John Roberts, *Walmart's Use of Sci-fi Tech to Spot Shoplifters Raises Privacy Questions,* Fortune (9 November 2015), http://fortune.com/2015/11/09/wal-mart-facial-recognition/.

[138] *Facial Recognition software moves from overseas wars to local police,* NYTIMES (12 AUGUST 2015). https://www.nytimes.com/2015/08/13/us/facial-recognition-software-moves-from-overseas-wars-to-local-police.html.

[139] *San Diego County Quietly Scanning Faces for Its Growing Surveillance Database,* ALLGOV CALIFORNIA (18 November 2013), http://www.allgov.com/usa/ca/news/top-stories/san-diego-county-quietly-scanning-faces-for-its-growing-surveillance-database?news=851681, reporting that, according to the Electronic Frontier Foundation of San Francisco, "The Tactical Identification System (TACIDS) is used by 25 local, state and federal law enforcement agencies, including U.S. Immigration and Customs Enforcement (ICE)."

sarcasm, irony, and "emotional communication that feels more heartfelt because each emoji is individually, carefully selected."[140]

D. Are Emoji Predictable?

Our conclusion from above is that human bias and predilections infuse the algorithms we build. Those who research the social aspect of human computer interaction are increasing aware of that limitation, as indicated in a recent study by researchers of machine learning from MIT and Microsoft. They found, when using the dermatologists'-approved Fitzpatrick Skin Type classification system to study gender and skin type distribution in face imaging, that the datasets were "overwhelmingly composed of lighter-skinned subjects." [141] They evaluated three classification systems used in industry and found that darker-skinned females are the most misclassified group with error rates up to almost 35%, while the maximum error rate for lighter-skinned males was a mere 0.8%. The researchers urge correction of such disparities in the accuracy of classifying darker females, lighter females, darker males, and lighter males in gender classification systems if commercial companies are to build genuinely fair, transparent and accountable facial analysis algorithms.[142]

Those findings lead us to wonder whether emoji icons are predictable. In a 2017 study from Barcelona a research team was interested in comparing the ability of an artificial agent and a human to correctly predict which emoji would best complement text selections. Barbieri et al. examined the relationship between words and emoji in Twitter messaging to determine which text-based tweets most commonly evoke which emoji. [143] They removed all emoji from a thousand tweets that contained one of the following five ideograms: 😀, ❤️, 😍, 💯, and 🔥 and then asked both human and artificial agents to choose which emoji corresponded to texted messages. The research team found computational models using AI are able to better capture the underlying semantics of emoji that humans; in other words, algorithms were able to predict with greater accuracy which

---

[140] Hess, *supra* note 76.

[141] Joy Buolamwini & Timnit Gebru , *Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification*, 81 PROC. MACH. LEARN. RES., 1–15, Conf. FAIR., ACCOUNT & TRANSP. (2018).

[142] Recommendations include rigorous reporting on the performance metrics on which algorithmic fairness debates are based as well as increasing phenotypic and demographic representation in face datasets and algorithmic evaluation.

[143] Francesco Barbieri et al., *Are Emojis Predictable?* PROC. 15TH CONF. EUR. CHAP. ASSOC. COMP. LING., 105-111 (2017). The researchers studied tweets generated in the United States between October 2015 and May 2016 and focused on the 5 most used emoji (😀, ❤️, 😍, 💯, and 🔥). The researchers studied 40 million tweets generated in the United States between October 2015 and May 2016.

words in a tweet triggered a particular emoji. That discovery means that, within the parameters of that exercise at least, automatic systems are better than people at correlating a word with a particular icon to convey a particular meaning.[144] A similar study of a Swiss German Whatsapp body of texts found that emoji are not suited to replacing words entirely, just clarifying them as any graphic sign would do.[145]

E. Emoji of Hate

Although emoji are distributed worldwide, domestic laws of nation states determine the official level of tolerance for hate speech.[146] Hate symbols, including emoji, are readily available online, many as adaptations or misuses of the Consortium's inventory of approved icons. As many exist primarily on the dark web or within localized chatrooms, their precise intent is often obscured by innuendo. For example, claims that the 👌 hand emoji represents white power is difficult to establish or disprove given the activity of trolls and the irresistible urges of detractors to bait white nationalists or supremacists.[147] Whether truth or hyperbole, such claims involve the adoption of certain emoji such as 💯 , initially a sports symbol meaning going all out for a team win, but reportedly adopted by trolls, neo-Nazis, Klansmen, and other purveyors of such internet message boards as 4chan to indicate a person's racial makeup that is less than 100 percent Caucasian.

Another online constituency that is increasingly well known for its hate messaging is comprised of incels or women haters who "see themselves as 'involuntarily celibate'."[148] Select emoji have been adopted by the self-identifying group, such as Frog Face or Pepe the Frog (🐸),

---

[144] *Id,* 109. The authors now propose to study how to forecast the position of emoji relative to words that trigger it.

[145] C. Durscheid & C.M. Siever, *Beyond the Alphabet-Communication of Emojis,* 45:2 Zeitschrift fur germanistische Linguistik,   256-285   (2017).   https://www.researchgate.net/publication/315674101_Beyond_the_Alphabet_-_Communication_with_Emojis.

[146] In the United States, hate speech enjoys broad protection under the First Amendment in order to encourage robust public debate. It is only criminalized if it directly incites imminent violent criminal acts.

[147] *Full Emoji List 12V.0* (U+1F44C) https://unicode.org/emoji/charts/full-emoji-list.html#1f44c.

[148] Lauren McKeon, *How Everyday Misogyny Feeds the Incel Movement,* THE WALRUS (7 May 2018) https://thewalrus.ca/how-everyday-misogyny-feeds-the-incel-movement/.

the eggplant (🍆), and the hotdog (🌭).[149] Pepe the Frog was publicly identified as a hate

symbol in 2016 by the US Anti-Defamation League.[150]

The adoption of emoji by hate-related groups truly demonstrates the murkier side of emoji,

more an affront to our ethical values than liable to prosecution for violations to speech freedom.

IV.   Designing an Ethical Web

If we resist the distractions of the latest toys in this technological revolution and focus more

broadly on the ethics of it all, we can think about our "values and their priorities, good behaviour,

and what sort of innovation is socially preferable," in this online-offline infosphere we have

created.[151] Law and technology philosopher Luciano Floridi of the Oxford Internet Institute in

the United Kingdom suggests we should be asking ourselves, "[W]hat kind of mature

information societies do we want to build? What is our *human project* for the digital age?"[152]

The Web has galloped from one technological innovation to the next over the last 30 years

with limited formal consideration of how those inventions represent our best social and political

values. Each year since 1994, The Web Conference is held near Silicon Valley where the majority

of internet companies are headquartered; it provides a forum for those very concerns. The

conference program suggests that emoji hold a central place in those conversations to "rethink a

Web that is truly inclusive and open, a Web for good."[153]

One paper on the 2019 program stresses the challenges that lie ahead if emoji proposals

are to make an impact on society through their contributions to "equity, diversity, and fairness."[154]

The researchers, primarily from the University of Tennessee, determine that a frequent rationale

for proposing new emoji is a sense of unfairness projected when the Consortium approves one

---

[149] Suggesting the penis and masturbation, respectively. See further, *incel Emojis, Emoticons, Smileys,* FASTEMOJI.COM, https://www.fastemoji.com/Search/?order=newest&q=incel. Pepe the Frog has more recently been associated with supporters of Donald Trump according to Emojipedia at https://emojipedia.org/frog-face/.

[150] Jessica Roy, *How 'Pepe the Frog' went from harmless to hate symbol,* L. A. TIMES (11 October 2016) https://www.latimes.com/politics/la-na-pol-pepe-the-frog-hate-symbol-20161011-snap-htmlstory.html.

[151] As suggested by Luciano Floridi, *Soft Ethics and the Governance of the Digital,* 31:1 PHIL. & TECH. (March 2018), https://link.springer.com/article/10.1007/s13347-018-0303-9. Merriam Webster defines 'ethics' as the discipline dealing with what is good and bad and with moral duty and obligation.

[152] *Id.*

[153] The Web Conference, *supra* note 8.

[154] Feng et al., *The World Wants Mangoes and Kangaroos: a study of new emoji requests based on 30 million tweets,* Paper   Submission   for   THE   WEB   CONFERENCE,   San   Francisco   (May   2019), http://yunhefeng.me/material/Emoji_www.pdf. Researchers collected more than thirty million English tweets containing the keyword "emoji" from October 2017 to October 2018 and filtered out bot-generated tweets.

emoji image but not another with a similar function. For example, the paper notes that, while a Republican elephant is part of the inventory, a Democrat donkey is not; the acceptance of a United States flag does not suggest a corresponding Confederate flag; a flag of the island of Jersey is included but not one for Scotland or Wales; blonde hair is included but red hair is not; a breastfeeding woman is not accompanied by a man holding a baby, while a man in tuxedo does not inspire a woman in tuxedo.[155] The paper concludes by noting that proposals from social activists, accompanied by endorsement from non-profit corporations, are more likely to receive Consortium approval, such as a joint proposal by Johns Hopkins Bloomberg School of Public Health researchers and the Bill & Melinda Gates Foundation for a mosquito emoji to better explain insect-borne pandemics.[156]

Companies are faced with technical choices too, as they formulate business models and policies; those choices are now being closely scrutinized for their interaction with user rights and public interests. This section explores those standards, implementations, and other current efforts at building a more ethical web.

A. Emoji for Good

The potential beneficence of emoji is impressive.[157] They can give voice to children and the elderly. The following examples illustrate the facility of emoji to engage people with particular social welfare vulnerabilities. Both stories also pose ethical questions.

In 2016 the British Broadcasting Corporation (BBC) announced a local project in the Midlands of England to find out how their radio and television programming could better represent various communities. BBC researchers discovered that a local artist had prepared several emoji designs aimed at reflecting the lifestyles of the older generation.

---

[155] *Id,* Table 2, requesting related emojis in the same tweets.

[156] Marla Chaivitz and Jeff Chertack, *Proposal for Mosquito Emoji,* UNICODE.ORG (30 June 2017) http://www.unicode.org/L2/L2017/17268-mosquito-emoji.pdf.

[157] Beneficence is a moral concept in the study of theoretical and applied ethics, relating to "social welfare programs, scholarships for needy and meritorious students, communal support of health-related research, policies to improve the welfare of animals, philanthropy, disaster relief, programs to benefit children and the incompetent…"*The Principle of Beneficence in Applied Ethics,* STANFORD ENCYCLOPEDIA OF PHILOSOPHY (2 JANUARY 2008 with *substantive revision* 11 February 2019) https://plato.stanford.edu/entries/principle-beneficence/.

Included in the designs, eventually submitted to the Consortium, were "memory pills" (center) and "spending the kids' inheritance money," (right). [158] In another community in Mid-Atlantic America, a similarly upbeat project was being offered by a senior care service to inform older residents about how to choose emoji wisely when messaging their children and other youngsters. The non-profit organization posted a Senior's Guide to Emojis on its website, alerting seniors of the double entendre carried by some emoji: that the 🔥 is more accurately used to indicate something is "hot" or trending; and 💁 might represent someone who is helpful, but is just as likely to show "sass or sarcasm".[159] This service represents a welcome initiative to educate older social media users when engaging with their families and friends. The downside is the reality of technology creep when it comes to personal data. Seniors need to be informed as well on the profit motive and data sharing risks involved in the use of emoji and other AI enabled tools.[160] Online warnings about the risks of our obsession with mobile devices is well represented in media opinion pieces and academic research; the ethical question is whether it should also be mandated for non-profit websites that offer free advice to vulnerable sectors such as seniors.[161]

In the area of child well-being, emoji have been used to measure emotional status. A study from Flinders University encouraged 78 children 10 years and under to use emoji to indicate their own sense of well-being in a way that their levels of language use could not. The results showed that emoji were a catalyst for self-expression among the young participants about their emotional status. Some concepts, however, were more difficult for the children to explain, such as the difference between "frustrated" and "bored" and a more precise explanation of the feeling of "sad".

---

[158] Rachel Thompson, *Grandmother creates emoji to better reflect older people,* MASHABLE (28 October 2016) https://mashable.com/2016/10/28/emoldji-emoji-older-people/#hzL0EmB1yiqZ. The images were designed by Chris Oxenbury.

[159] Stephen Juliano, *A Senior's Guide to Emojis,* Presbyterian Senior Living (26 January 2017), *https://www.presbyterianseniorliving.org/blog/a-seniors-guide-to-emojis.*

[160] Jacon Brogan, *The New iPhone's Most Adorable Feature is Also its Most Troubling,* SLATE (12 December 2017), https://slate.com/technology/2017/09/three-reasons-why-apple-s-iphone-x-animojis-are-worrisome.html, describing how AI (emoji graphics and facial recognition) are combined to produce animoji, a feature discussed herein, Part 2(ii).

[161] *See, for example,* Linda Boise et al., *Willingness of older adults to share data and privacy concerns after exposure to unobtrusive in-home monitoring,* 11 GERONTECHNOLOGY (2013) 428–435; *and,* contra, Eric Andrew-Gee, *Your Smartphone 📱 is making you stupid 👉 anti-social 🙇 and unhealthy 😷. So why can't you put it down?* THE GLOBE AND MAIL (6 January 2018) https://www.theglobeandmail.com/technology/your-smartphone-is-making-you-stupid/article37511900/ referencing the dopamine-like effects of smartphone use as well as the appeal to the same neurotransmitters as involved in gambling and drug use.

The researchers concluded that emoji designs with increased ambiguity, such as 😐,[162] generated a greater number of ideas, but more disagreement and negotiations among the children as well.[163]

The following conversation thread from the Flinders study reveals that great skill is called for by researchers in handling the vulnerability of children when they express their emotions:

Researcher: Reid, can you tell me a story about feeling sad?

Reid: This week

Researcher: Did you feel sad this week? Can you tell me what made you feel sad?

Marcus: I've been sad

Lee: A creature bite you

Researcher: Lots of interesting ideas...[interrupted by Marcus]

Marcus: I've been sad!

Researcher: I want to hear your ideas in a minute Marcus, but I'd like to let Reid finish his story? Reid when did you feel sad?

Reid: Someone hit me [164]

While our discussion here focuses on the use of emoji as a public good, those implications of possible physical abuse raise the ethical repercussions of using seemingly innocuous, graphically appealing icons to elicit emotional information from vulnerable sectors. The researchers involved in the Flinders study certainly seem compliant with current ethical standards set by institutional boards. They disclose that they obtained clearance from the Flinders ethics committee which in turn is based on the National Statement on Ethical Conduct in Human Research 2007.[165] The research team also gained permission from centre directors, from a parent or guardian, and "assent" from the child participants (where vulnerable human subjects are unable to grant consent).

Nonetheless, as the transcript above shows, personal revelations by minors that implicate third parties in unethical or criminal conduct is a concern that should be specifically addressed in

---

[162] Identified on the iOS keyboard as "neutral face".

[163] Jennifer Fane, *Using emoji as tool to support child wellbeing from a strength-based approach,* 1 LEARNING COMMUNITIES, (November 2017) www.cdu.edu.au/sites/.../using_emoji_as_a_tool_to_support_child_wellbeing_.pdf.

[164] *Id.,* 161.

[165] *National Statement on Ethical Conduct in Human Research,* NHMRC (2007; updated 2018) https://www.nhmrc.gov.au/about-us/publications/national-statement-ethical-conduct-human-research-2007-updated-2018.

the screening of research proposals. The Flinders study results claim that such revelations are more readily forthcoming from children through the use of emoji.

B. Correcting for Gender Bias

Despite concerns about algorithm bias that can skew our hopes for diversified emoji, there is research to show that, when designed properly, algorithms can actually be more fair, transparent and efficient than humans.[166] Such was not the case in 2016 when a Stanford University researcher posed the following analogy problem to a machine learning algorithm: "Man is to Computer Programmer as Woman is to X." The answer returned by the machine was "Homemaker."[167] Further man-woman analogies produced in the same experiment proposed 'doctor' and 'architect' to which the algorithm suggested 'nurse' and 'interior designer' respectively as female counterparts.[168] James Zou and his Stanford team then tackled how to devise a debiasing system. The team manually identified examples of the types of connections that are appropriate (brother/sister, king/queen) and those they determined should be removed. Using those human-generated distinctions, they quantified the degree to which gender was a factor in those word choices and instructed their machine-learning algorithm to remove the gender factor from the connections in the embedding and hence the biased stereotypes, without reducing the overall usefulness of the embedding.[169] The team found that the algorithm no longer exhibited blatant gender stereotypes. The key question for diversity rectification is whether similar methods can be applied to remove other types of biases, such as racial or cultural stereotypes.

From China comes important research that finds "a considerable difference in emoji usage by female and male users," noting that the difference is sufficiently broad that it can be utilized to infer the user's gender.[170] Most relevant to gender difference is the finding that emoji selection by a user can infer gender without *any* text or further information about the user. Other findings are

---

[166] Wood & Altman, *supra* note 103.
[167] James Zou et al., *Removing gender bias from algorithms,* THE CONVERSATION (25 September 2016), https://theconversation.com/removing-gender-bias-from-algorithms-64721.
[168] Similar results were found in 2010 with hotspot maps used by Chicago police.
[169] James Zou et al., *supra* note 168.
[170] Zhenpeng Chen et al., *Through a Gender Lens: Learning Usage Patterns of Emojis from Large-Scale Android Users,* 2018 INT. WORLD WIDE WEB CONF. (IW3C2) 23-27 April 2018, Lyon, France, https://doi.org/10.1145/3178876.3186157.

that (1) women are more likely to use emoji than men; and (2) men and women have qualitatively different preferences in using emoji to express sentiments.[171]

An empirical study from Brigham Young University in 2014 examined text messaging for gender differences and found several areas of gender discrepancy: in selecting recipients, gathering information, seeking entertainment (trolling), ending relationships, arguing, seeking privacy and exclusion, using text shorthand and slang, and using text messaging for dating.[172] Specific findings included information that, in the sample group of 27 participants ages 18 to 35, a man identified one use of emoji as "full-on flirting" while a woman commented that some use smiley faces for buttering her up.[173] Members of a male focus group complained that people use emoji when they are angry and that some people overuse them.[174] Significantly, females in this study indicated they used text messaging to maintain privacy by communicating one on one: to them, text messaging prevents others from participating in the text conversations. Male participants did not mention using text messaging for privacy or to exclude other people.

The Brigham Young study addressed current risks to user privacy more generally. One participant worried, "Even though user IDs can be anonymized, such [natural language processing] techniques are still at the risk of accessing and leaking sensitive, private information of the users that are encoded in free text."[175] Sharing user profiles has become a popular practice between Internet-based applications. For example, users are asked to associate their own social networking accounts with an application that can then acquire their profiles. Indeed, when the gender, age, and preferences are known, the application can offer several technical benefits for the user: better interface design, personalization, and recommender systems. However, such convenience has a flip side, exposing a user's personal information beyond our imaginations or informed consent.

---

[171] *Id.*

[172] SARA R. SHAWCROFT, GENDER DIFFERENCES IN TEXT MESSAGING, Master's Thesis, Brigham Young University (2014), https://scholarsarchive.byu.edu/etd/3965. The sample consisted of 27 participants ages 18–35; 14 were female and 13 were male. Data were collected from the participants via the focus group approach. Two of the groups consisted of females, and two of the groups consisted of males.

[173] *Id*, 44.

[174] *Id,* 47.

[175] *Id,* 48. The authors remind us that there is sensitive information in our free text messages, "such as "$"(transactions), "@yahoo.com" (email addresses), "http"(Websites), dates, time, and many numbers (age, phone numbers, personal identifiers, financial information, etc)."

In summary, getting computer experts to publicly admit that algorithms can discriminate is critically important for correcting for gender bias.[176] A quick Google image search can illustrate that point, as was explored in a University of Washington study of images of 45 different occupations in 2015 that found significant underrepresentation of women images across all professions.[177] Matthew Kay et al. found evidence for both stereotype exaggeration and systematic underrepresentation. Regarding the former, the research team noted search results can be biased even when their gender proportions are representative. They identified many examples of sexualized depictions of women who were almost certainly not engaged in the profession they portrayed, such as "the sexy construction worker." The corresponding tendency was not found in male counterparts.[178]

They also found that people rate search results higher when they are consistent with stereotypes for a career. They recommended that, if those gender representations are more evenly available in search results, people's perceptions about real-world distributions should shift toward more equitable representation.

C. Correcting for Age Differences

In 2016, New York Times CEO Mark Thompson was sued for discrimination in hiring: his advertising staff had allegedly become "increasingly younger and whiter."[179] As we progress towards the midpoint of the 21st century, when the population age distribution in the world is predicted to shift to a point where the over-60s approximate the number of under-15s, such hiring practices will appear even more disproportionate and unfair.[180] A more equitable and realistic representation is beginning to emerge in the emoji palette with the inclusion of more mature

---

[176] Jeremy Kun, *Big data algorithms can discriminate, and it's not clear what to do about it,* THE CONVERSATION (13 August 2015), https://theconversation.com/big-data-algorithms-can-discriminate-and-its-not-clear-what-to-do-about-it-45849. For the study *see* Tolga Bolukbasi et al., *Man is to Computer Programmer as Woman is to Homemaker? Debiasing Word Embeddings*, ARXIV.ORG (21 July 2016) https://arxiv.org/pdf/1607.06520.pdf.

[177] Matthew Kay et al., *Unequal Representation and Gender Stereotypes in Image Search Results for Occupations,* COMP. HUM. INTER. (CHI 2015) Seoul, Republic of Korea (18-23 April 2015) http://www.mjskay.com/papers/chi_2015_gender-bias-in-image-search.pdf.

[178] *Id.*

[179] *Lawsuit Against New York Times Boss for Ageism Racism Sexism*, TELESUR (28 April 2016) https://www.telesurenglish.net/news/Lawsuit-Against-New-York-Times-Boss-for-Ageism-Racism-Sexism--20160428-0046.html.

[180] Thirteen percent of the world population was over 60 in 2017 while 26 per cent was under age 15; the over 60 sector is projected to grow to be roughly equal to the number of children under 15 by 2050, according to United Nations, *World Population Prospects*, Department of Economic and Social Affairs, (2017) 12, https://esa.un.org/unpd/wpp/publications/files/wpp2017_keyfindings.pdf

images. The 'older man' 👴 and 'older woman' 👵 icons produced by Google attempt to address that gap, but the chosen graphics, unfortunately, perpetuate stereotypes: both images appear disappointingly outdated and graphically drab, highlighting weakening abilities (eyeglasses), and other stereotypes (baldness for men, hair in bun for women). Their competitors do not improve much on those graphics, as seen below left; the Unicode graphic of 'older person' is an improvement, although the skin and hair tones appear to be available only in default yellow. The image is shown below right:

Appl	Goog	FB	Wind	Twtr
👴	👴	👴	👴	👴
👵	👵	👵	👵	👵

[181]   🧓 **Older Person** [182]
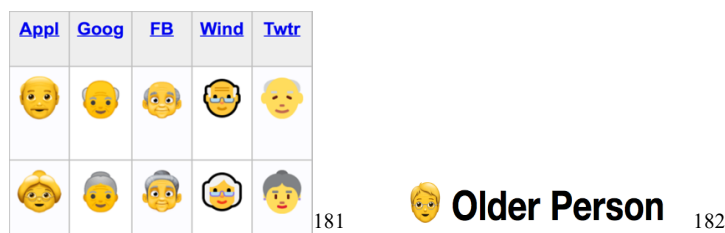
It is not just the optics of those icons that are misleading. As American author and ageism activist Ashton Applewhite points out, Americans over 50 control approximately 70% of their country's disposable income, and "marginalising the old through stigma is unacceptable from an ethical point of view and dumb from a financial and social one too."[183] As a corrective, emoji designers and entrepreneurs would do well to heed Applewhite's admonition that "employment structures and institutions need to adapt and catch up to the evolutionary shadow of the new era in which human beings have never lived so long."[184]

An interesting corrective can be seen with two studies that used emoji for feedback on various foods and found that emoji interpretation can be calculated independent of age. The first by Marianne Swaney-Stueve et al., found that consumers of different genders and ages used emoji similarly to comment on food quality.[185] The second study by Sara Jaeger et al., used a web-based survey with 33 emoji to comment on food quality and found that gender and age did not influence consumer ability to describe and discriminate between stimuli; rather the level of experience with

---

[181] *Full Emoji List*, v-12.0, UNICODE.ORG, https://unicode.org/emoji/charts/full-emoji-list.html.
[182] *Older Person* was approved as part of Unicode 10.0 release in 2017 and added to Emoji 5.0 in 2017.
[183] ASHTON APPLEWHITE, THIS CHAIR ROCKS (2016).
[184]Trisha De Borchgrave, *Ashton Applewhite on ageism and the bias against our future prosperity,* THEBIGSMOKE (18 August 2018) https://thebigsmoke.com.au/2018/08/18/ashton-applewhite-on-ageism-bias-against-future-prosperity/.
[185] Marianne Swaney-Stueve et al., *The Emoji Scale: A Facial Scale for the 21st Century,* 68 FOOD QUAL. & PREF. 68 (March 2018).

emoji was the significant factor.[186] Finally, Ian Hosking of Cambridge University's Engineering Design Centre urges researchers to avoid lumping senior digital learners together: "There are seniors who embrace technology, they love technology, they find it liberating. And there are those who are literally scared of it."[187] Hoskins finds it more equitable to focus on "inclusive design" and "empathetic engineering" of digital devices and programming to accommodate all ages.[188]

D. Correcting for Cultural Differences

With novel access to our genetic ancestry offered by the Human Genome Project since 2003, we are learning that the older truism that world population was based on "five races" is no longer sustainable.[189] That wisdom held that each race is categorically distinct and, as well, individual races are composed of a relatively uniform genetic identity. A closer look at patterns of genetic variation in all humans tells us that, although populations cluster into geographical regions, the actual variation between regions is small and genetic lines between populations are becoming progressively blurred. On the other hand, due to large variation within a single region, there is no uniform identity.[190] In other words, race cannot be precisely biologically defined due to genetic variation among human individuals.[191]

Those conclusions tell us that using non-verbal graphics to convey the idea of race will not give a true picture for all observers. An American team of researchers tested that thesis in 2013 with facial emoticons.[192] They were interested in whether emoticons are socially transmitted,

---

[186] Sara R. Jaeger, et al., *Emoji questionnaires can be used with a range of population segments: Findings relating to age, gender and frequency of emoji/emoticon use,* 68 SCIENCEDIRECT (September 2018) 397-410.

[187] CBC Radio, *Designing tech for 'seniors' should mean designing tech for everyone,* SPARK (24 MARCH 2019), https://www.cbc.ca/radio/spark/spark-431-1.5058858/designing-tech-for-seniors-should-mean-designing-tech-for-everyone-1.5058862.

[188] Ian Hosking, et al., *Empathic engineering: helping deliver dignity through design*, 39 J. MED. ENG. & TECH. (2015) 388–394.

[189] Vivian Chou, *How Science and Genetics are Reshaping the Race Debate of the 21st Century,* HARV. U. GRAD. SCH. ARTS & SCI BLOG (17 April 2017), http://sitn.hms.harvard.edu/flash/2017/science-genetics-reshaping-race-debate-21st-century/, identifying the original five races as African, Asian, European, Native American, and Oceanian.

[190] According to Catalina Lopez-Correa of Genome BC, "Your genome is your barcode. It's your identifier. More than your bank account…people that will have access to that will have access to myself, basically." See further, CBC Radio, *Your genome could help medical research. It could also be a privacy nightmare,* SPARK (27 March 2019), https://www.cbc.ca/radio/spark/your-genome-could-help-medical-research-it-could-also-be-a-privacy-nightmare-1.5058866.

[191] Sara A. Tishcoff & Kenneth K. Kidd, *Implications for biogeography of human populations for 'race' and medicine,* NATURE GEN. (2004) http://www.nature.com/naturegenetics.

[192] Jaram Park et al., *Emoticon Style: Interpreting Differences in Emoticons Across Cultures,* INT. CONF. WEBLOGS & SOC. MED. (2013)

diffusing through the social network of Twitter users as rumors would be transmitted through a social group. The team examined tweets of 54 million users from 2006, the first year of Twitter availability, to 2009 to determine which emoticons are most popular and how broad their appeal might be in a new cultural setting.

They found that emoticons come in two styles, either horizontal (:-)) or vertical (^_^) and preference for those styles are determined by one's language, not necessarily by geographic region. English and 'European' language speakers preferred the horizontal format; speakers from eastern countries such as Japan, China, and Korea, the vertical. As well, it was found that people from different cultures perceive and employ facial expressions in unique ways, with easterners smiling and frowning with their eyes, whereas westerners do so with their mouths. That discrepancy affirms that facial expressions are not universal in presentation. It also suggests that emoticon diffusion is not simply cross-cultural.[193]

The growing inventory of emoji in the Consortium's Unicode Standard should make us more culturally literate, more aware of multiculturalism, according to Japanese cultural scholar Alisa Freedman of the University of Oregon.[194] She notes that, even as they globalize, emoji that carry clues of Japanese life require a curiosity about cultural knowledge in order to be understood.[195] Freedman refers to icons like the bowing man, receptionist woman, masked sick face, and foods like *dango* and *oden* that are not readily understood in western cultures. Because those objects are cultural-specific, not everyone worldwide can read all the emoji preprogrammed into their phones. If we possess that curiosity Freedman calls for, we can expand our viewpoint and hence our tolerance.

Recent growth in the tribalism mentality fueled by isolation policies and right wing politics within certain nations forecloses universal understanding and encourages what Freedman describes as 'secondary meanings" that flourish as a backlash in local contexts. She cites the clasped hands emoji (🙏) meaning "thanks" or "please" in Japan, "namaste" in India, but more likely to symbolize prayer or pleading in western nations. She provides another example from the Japanese New Year's decoration of three pieces of bamboo, the middle one higher than the other

https://www.researchgate.net/publication/261995763_Emoticon_Style_Interpreting_Differences_in_Emoticons_Across_Cultures. Emoticons are the typographical precursors of the more graphic emoji.
[193] *Id.*
[194] Alisa Freedman, *Cultural literacy in the empire of emoji signs: Who is crying with joy?* 23 FIRST MONDAY (3 September 2018), https://firstmonday.org/ojs/index.php/fm/article/view/9395/7567.
[195] *Id.*

two (🎍). The icon has been adopted as the obscene middle-finger gesture by cultures outside of Japan, suggesting that when cultural literacy is absent, personal interpretations will fill the void. An example of the cross-cultural distribution of emoji that can cause offence can be seen in the predilection of US president Donald Trump for the 👍 icon, signalling 'success' in America but 'get stuffed' in various cultures.[196]

An important ethical question has been raised by a Northumbrian University researcher that goes to the heart of the process employed to diversify emoji design: does the fact that the technology giant Apple Inc. led the proposal for accessibility emoji disprove the Consortium's claim it is listening to the needs of its users?[197]After all, Apple executives have a seat on the Consortium board that is the final arbiter of the Unicode emoji collection.[198]

At best, the Consortium standardization process gives visibility to ideas and images that counter discrimination by expanding our literacy about culture, gender, and ageism. At worst, if certain emoji designs are not accepted, the process can erase a vast potential to disseminate symbols that validate our cultural, gender, and age-related identity.[199]

V.   Venturing Forth

        i) The Legal Status of Emoji

Emoji use is not regulated as such.[200] To date, they have provided evidence in court to support or refute charges of criminal harassment, threats, stalking, or extortion and civil claims of breach of contract or defamation.[201] They could arguably be included in the broader scope of legislation directed at digital speech regarding privacy, diversity, and equality issues, although no cases could be located for this paper that address those issues specifically for emoji use. The release of approved emoji pictographs is tightly regulated, however. The Consortium has been

---

[196] Gayle Cotton, *Gestures to Avoid in Cross-Cultural Business: In Other Words, 'Keep Your Fingers to Yourself?'*, HUFF. POST (13 August 2013), http://www.huffingtonpost.com/gayle-cotton/cross-cultural-gestures_b_3437653.html, reporting that the "thumbs up gesture" in Australia, Greece, or the Middle East means essentially "Up yours!" or "Sit on this!".

[197] Selina Jean Sutton, *Emoji are becoming more inclusive, but not necessarily more representative,* THE CONVERSATION (8 February 2019), https://theconversation.com/emoji-are-becoming-more-inclusive-but-not-necessarily-more-representative-111388.

[198] *Id.*

[199] Colette Shade, *The Emoji Diversity Problem Goes Way Beyond Race,* WIRED (11 November 2015), https://www.wired.com/2015/11/emoji-diversity-politics-culture/.

[200] Floridi, *supra* note 152, defining digital regulation as "a system of rules elaborated and enforced through social or governmental institutions to regulate the behaviour of the relevant agents in the infosphere."

[201] Kirley & McMahon, *supra* note 4.

called the *de facto* digital language regulator, "much like the L'Academie Francaise in France or the Academy of the Hebrew Language in Israel."[202] Users can only access newly created and existing emoji if computing platform manufacturers choose to make them available on keyboards. In turn, manufacturers, can only develop images for emoji code that are compatible across platforms as coded by the Consortium.

The Unicode Standards system sets the following criteria for emoji acceptance: they must be compatible with high-use emoji in popular existing systems such as Twitter and Snapchat; they must be used frequently within a very large community, such as in Latin America; they should have "multiple usages" as shown in metaphorical references or symbolism; they should represent something new and different from emoji already in the Unicode collection; they should present a clear image of a physical object; and they should have been frequently requested by outside advocates. The Consortium will reject proposed emoji that are overly specific (such as a snowy owl), too general (such as bird), or too graphically similar to images already covered in the Unicode collection. Fads or faulty comparisons are also not acceptable.[203]

Emoji have not received uniform recognition as best evidence in courts of law, although their submission during a trial is increasingly accepted within the common law system as well as in some civil system jurisdictions, notably in France.[204] Generally, emoji are assessed on an *ad hoc* basis by the judiciary, and the major determinants for their use are that emoji be authentic,[205] relevant, probative, and not based on hearsay.[206]

Overall, there seems to be little consistency in the reported case law regarding evidentiary standards and procedural steps.[207] Emoji took a significant step towards legal legitimacy in 2015 within the United States with the high-profile trial of Ross Ulbricht. The defendant was the creator of Silk Road, an online illicit drug marketing enterprise whose principals used emoji as code among themselves. The judge instructed counsel and jury members that text messaging exhibits

---

[202] Rachel Scall, 😐© 📕: *Emoji as Language and Their Place Outside American Copyright Law,* 5:2 J. INT. PROP. & ENTER. L. (1 May 2016) https://jipel.law.nyu.edu/vol-5-no-2-3-scall/#IIIC.

[203] *Submitting Emoji Proposals,* UNICODE.ORG, https://www.unicode.org/emoji/proposals.html#Selection_Factors_Compatibility.

[204] Rebecca A. Berels, *Take Me Seriously* 😐*: Emoji as Evidence,* Michigan State University College of law King Scholar Program, https://www.law.msu.edu/king/2016-2017/Berels.pdf suggesting that emoji can be admitted as evidence under the United States Federal Rules of Evidence, provided they follow its recommended eight steps.

[205] It is important to establish that the person in question owns the account and posted the information.

[206] Berels*, supra* note 204.

[207] See further, Kirley & McMahon*, supra* note 4 at 38-45; Berels, *supra* note 204 at 21-27.

should be shown to the jury and considered in their deliberations *with emoji intact* to show the accused's intentions.[208] In the High Court of Lancashire County, England, the judge in a family law matter incorporated a 😃 in his judgment to better communicate to the children of the defendant about access arrangements.[209] That case added some credence to emoji as communicators in British courts. In the majority of cases, however, judges are reluctant to include emoji icons in written exhibits, possibly due to the technical issues involved in reproducing them in a reported judgment.[210] That omission makes online case searches problematic; one suggestion is to include the Unicode code points for any emoji involved.[211]

In 2018, a systematic review from Erasmus University, Rotterdam, on the admissibility of emoji was conducted in 11 jurisdictions worldwide and found that in some countries, electronic evidence is confined primarily to the area of criminal law (Belgium and the Netherlands) and has received scant attention under civil law and procedure (China).[212] In common law countries (United States, England, and Wales), electronic discovery and disclosure are the focus of the discussion.[213] The Rotterdam study emphasizes that in some jurisdictions, including Canada, technological literacy by counsel is considered an obligatory part of a lawyer's ethical duties by licensing bodies.[214]

Privacy issues in relation to electronic evidence, particularly data generated by our use of personal devices and social media, bring the European Union's General Data Protection

---

[208] *United States v. Ulbricht,* 858 F.3d 71, 83 (2nd Cir. 2017)*; Olivia Marshall, *Your Emoji May be Used Against You in a Court of Law,* JETLAW (Nov. 22, 2016), http://www.jetlaw.org/2016/11/22/your-emoji-may-be-used-against-you-in-a-court-of-law/#; Kirley & McMahon, *supra* note 4.; B Weiser, *At Silk Road Trial, Lawyers Fight to Include Evidence They Call Vital: Emoji',* 28 January 2015) https://www.nytimes.com/2015/01/29/nyregion/trial-silk-road-online-black-market-debating-emojis.html, NYTIMES, citing linguist Tyler Schnoebelen.

[209] Lancashire County Council v. M & Ors [2016] EWFC 9 [27] (Eng.).

[210] Eric Goldman, *Displaying Emoji Evidence in Judicial Opinions*, TECH. & MARK. L. BLOG, (January 2018), https://blog.ericgoldman.org/archives/2018/01/displaying-emoji-evidence-in-judicial-opinions.htm.

[211] *Id,* discussing that code be displayed "[e]xplicitly or by publishing in a file format that retains this information even after glyph selection" (as per James Grimmelman).

[212] Xandra E. Kramer, *Challenges of Electronic Taking of Evidence: Old Problems in a New Guise and New Problems in Disguise* (1 September 2018). IL CONF. INTERN. & XXVI J. IBEROAMERICANAS DER. PROC. IIDP & IAPL, La Prueba en el Proceso / Evidence in the process Atelier 2018, 391-410, https://ssrn.com/abstract=3282678.

[213] *Id,* passim.

[214] Law Society of Ontario, *Engagement Letters and Retainers,* LSO.CA, https://lso.ca/lawyers/practice-supports-and-resources/topics/the-lawyer-client-relationship/retainer-or-non-engagement/retainer-agreement-or-engagement-letter, suggesting if stored in Dropbox, the data is more likely located within the United States; if stored by Google, lawyers are less likely to be informed where their clients' data is located.

Regulation (GDPR)[215] into play regarding the handling and storage of that data belonging to European Union citizens. Also involved are the norms set by Article 8 of the European Convention on Human Rights (ECHR) which are central to judgments on the right to "private life."[216]   The definition of 'data' in the GDPR does not specify emoji codes but is sufficiently broad to encompass them.[217] The regulation does not apply to anonymized data or pseudonymized data unless the latter can lead to identification of a natural person through additional information.[218] An emoji code could come under GDPR protection if generated in the EU and it contains a name, an identification number, location data, an online identifier, or other factors that lead to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person.[219] Data collected for research purposes are exempt and natural persons can waive protection through consent.

There is no equivalent legislation applicable uniformly across the United States to protect its citizens' personal data, nor enforcement mechanisms similar to EU Data Protection Authorities. [220] A mosaic of different federal and state regulations prevails in America, some

---

[215] Regulation (EU) 2016/679 of 27 April 2016 on THE PROTECTION OF NATURAL PERSONS WITH REGARD TO THE PROCESSING OF PERSONAL DATA AND ON THE FREE MOVEMENT OF SUCH DATA, and Repealing Directive 95/46/EC (General Data Protection Regulation) [2016] OJ L119/1.

[216] CONVENTION FOR THE PROTECTION OF HUMAN RIGHTS AND FUNDAMENTAL FREEDOMS, Rome, 4.XI.1950, as amended by the provisions of Protocol No. 14 (CETS no. 194). Article 8 reads: 1. Everyone has the right to respect for his private and family life, his home and his correspondence; 2. There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others. *For a study on the impact on human rights, see* Center for Research Libraries, *Human Rights Electronic Evidence Study* (Final Report, 2012) http://www.crl.edu/grn/hradp/electronic-evidence.

[217] GDPR Article 4 (1): 'personal data' means any information relating to an identified or identifiable natural person ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person;
Article 4(12) 'personal data breach' means a breach of security leading to the accidental or unlawful destruction, loss, alteration, unauthorised disclosure of, or access to, personal data transmitted, stored or otherwise processed;

[218] GDPR, Recital 26.

[219] Defined under Article 4 as "any freely given, specific, informed and unambiguous indication of the data subject's wishes by which he or she, by a statement or by a clear affirmative action, signifies agreement to the processing of personal data relating to him or her."

[220] Derek Hawkins, *The Cybersecurity 202: Why a privacy law like GDPR would be a tough sell in the U.S.,* THE WASH. POST. (25 May 2018), https://www.washingtonpost.com/news/powerpost/paloma/the-cybersecurity-202/2018/05/25/the-cybersecurity-202-why-a-privacy-law-like-gdpr-would-be-a-tough-sell-in-the-u-s/5b07038b1b326b492dd07e83/?utm_term=.369ff7e27acb, reporting that GDPR standards require companies that collect data to use simple language to explain how they handle it; companies must get explicit consent from consumers before doing anything with their information and allow them to request copies of their data or delete it entirely; companies must report data breaches on strict timelines; and fines for violations could cost them 4 percent of their

varying widely in protection measures. The self-regulatory model prevails over consumer access to software products and most US social media subscribers are aware of their responsibility under Terms of Use, if not versed in their specific provisions. Consumers might also be aware of the duty of social media companies to warn them of any massive data breaches, although publicity around the most prominent data breaches show very little liability, other than fines, even where the company is the perpetrator of those leaks, as was the case with Facebook's interactions with Cambridge Analytica.[221]

There are indications, however, that US policymakers are preparing to launch their own federal privacy law.[222] One impetus could be the alarming surveillance capabilities of AI. A political factor could be the reported fall in world dominance by the US in AI research, innovation, and markets, a development that could have key implications for the dynamics of informational, economic, and military superiority.[223] A preliminary report from the US Congress regarding the internet privacy bill comes with an agenda:[224] more investment in AI and funding to be made available to more agencies, from NASA to the National Institutes of Health; and a caution to legislators against stepping in too soon, creating too many regulatory hurdles for innovative technologies that are still developing.[225]

---

global profits. For issues related to updating the Children's Online Privacy Protection Rule (COPPA) regarding children's online privacy *see,* IN THE MATTER OF CHILDREN'S ONLINE PRIVACY PROTECTION RULE: REQUEST FOR PUBLIC COMMENT ON PROPOSAL TO AMEND RULE TO RESPOND TO CHANGES IN ONLINE TECHNOLOGY submitted to the US Federal Trade Commission on 23 December 2011 with comments by 17 non-profit intervenors, https://www.ftc.gov/enforcement/rules/rulemaking-regulatory-reform-proceedings/childrens-online-privacy-protection-rule.

[221] Jon Brodkin, *Facebook may face multi-billion dollar fine for Cambridge Analytica scandal,* ARS TECHNICA (15 February 2019**)** https://arstechnica.com/tech-policy/2019/02/facebook-may-face-multi-billion-dollar-fine-for-cambridge-analytica-scandal/ explaining that the FTC reported that Facebook "deceived consumers by telling them they could keep their information on Facebook private, and then repeatedly allowing it to be shared and made public."

[222] Ana Santos Rutschamn, *Congress Takes First Steps Toward Regulating Artificial Intelligence,* GOV. TECH. (19 October 2018), https://www.govtech.com/products/Congress-Takes-First-Steps-Toward-Regulating-Artificial-Intelligence.html.

[223] Ecatarina Garcia, *The Artificial Intelligence Race: U.S., China, and Russia,* MOD. DIPL. (19 April 2018), https://moderndiplomacy.eu/2018/04/19/the-artificial-intelligence-race-u-s-china-and-russia/.

[224] United States Government Accountability Office, INTERNET PRIVACY, ADDITIONAL FEDERAL AUTHORITY COULD ENHANCE CONSUMER PROTECTION AND PROVIDE FLEXIBILITY, GAO-19-52 (January 2019) https://www.documentcloud.org/documents/5736212-GAO-privacy-report.html. The Report, released to the Committee on Energy and Commerce, was initiated in the wake of an announcement in April 2018 that Facebook had released personal data belonging to approximately 87 million subscribers to the political consulting firm Cambridge Analytica.

[225] At this point, national privacy issues regarding individual protections of personal data comes under section 5 of the Federal Trade Commission Act (1914), the federal authority for unfair and deceptive practices, in addition to a variety of industry-specific legislation.

Individual states are also moving quickly to frame data privacy laws that assign more responsibility to internet companies and that move away from the opt-out and other self-regulatory mechanisms that have burdened the US consumer so far. The most expansive state privacy law model is the California Consumer Privacy Act passed in 2018; other state initiatives are following, in Washington State, Hawaii, Maryland, and New Mexico. [226]

B. Emoji, AI, and an Ethical Web

In this paper we have explored the burgeoning market in AI-enabled emoji products such as animoji, memoji, and other offerings of personalized keyboards to find ethical landmines they can create for those looking for equal representation. As our AI powered devices scrape, store, and share our data points to better serve us, (think personal assistants Alexa from Amazon, Apple's Siri, and Mattel's Aristotle toys that record our children's conversations)[227] we need to be mindful of the privacy and security trade-offs thrown into the bargain. Our emoji coding could, as we now know, be included in those data sweeps.

Now more than ever, ethics have an important role in ensuring that our regulations steer us towards the "Web for good" that we envision.[228] Certain initiatives in Europe and in America make first steps to cement the legal/ethical relationship. The European Union has established the Ethics Advisory Group (EAG) to better understand the ancillary role of ethics in the mandatory compliance with the GDPR by internet companies. The EAG model could influence US legislators and ethics authorities on issues of privacy, security, and human rights protections as our devices and lives become more entangled in new knowledge that the Internet of Things affords us.[229]

In America, the Berkman Klein Center for Internet and Society at Harvard University has similarly reached out to the technology industry to address ethical issues posed by AI outside the

---

[226] Jackson Lewis PC, *Washington State's GDPR-like Bill Passes Senate,* LEXOLOGY (29 March 2019), https://www.lexology.com/library/detail.aspx?g=b8176356-29c6-49cd-bbae-0d61bbb8c28b.

[227] James Vlahos, *Smart Talking: are our devices threatening our privacy?* THE GUARDIAN (26 MARCH 2019) https://www.theguardian.com/technology/2019/mar/26/smart-talking-are-our-devices-threatening-our-privacy; and Margaret K. Evans, *Kids, AI devices, and intelligent toys,* MIT MEDIA LAB (6 June 2017), https://www.media.mit.edu/posts/kids-ai-devices/.

[228] The Web Conference, *supra* note 8.

[229] *See further,* EDPS Ethics Advisory Group, *Towards a digital ethics,* EUROPEAN DATA PROTECTION SUPERVISOR (EDPS) (25 January 2018) https://edps.europa.eu/sites/edp/files/publication/18-01-25_eag_report_en.pdf.

ivory towers of academe.[230] The Center's Assembly Project encourages participants from designers to policymakers to put their heads together over such questions as: "How do we ensure that AI systems serve the public good rather than exacerbate existing inequalities and biases?"[231] The project focuses on how AI is straining our notions of human autonomy and democratic norms. This can be seen in several areas where AI exceeds human effort in such undertakings as sustaining repetitive tasks, anticipating customer needs, and enhancing customer experiences with voice and visual interfaces. According to Assembly Project participants, corporate ethics could prove to be one of AI's most supportive frontiers.[232] Ideally in future, Internet companies could be tasked with routing out injustices and omissions in the search for diversity fairness.

With AI positioned to be a dominant force in future innovations, we must remind ourselves that there can be a middle ground between corporate will and responsible, ethical technological progress.[233] We can reside in that middle space by:

1. *Being realistic in our expectations*

We can achieve that by looking "beyond the metrics suggesting that AI programs are functional, time-saving and powerful" and participating in conversations about how to eliminate or lessen data bias as the technology evolves.[234]

2. *Looking to laws and ethics to get control over changes that we need*

We can recognize that "[o]ur inventions change the world, and our reinvented world changes us."[235] We should be aiming for fairness and privacy, but when that is temporarily unattainable, we can keep control by becoming savvy about our new knowledge and what choices it allows us.

---

[230] Insights Team, *Inside The R&D of AI Ethics,* FORBES (27 March 2019), https://www.forbes.com/sites/insights-intelai/2019/03/27/inside-the-rd-of-ai-ethics/#18b474147dbc, describing the launch by Harvard University's Jonathan Zittrain of the Assembly Project, a collaborative brainstorming exercise with MIT focusing on AI and ethics.

[231] Berkman Klein Center, *Ethics and Governance of AI,* HARV. UNIV. (2019), https://cyber.harvard.edu/topics/ethics-and-governance-ai.

[232] *See further,* Insight Team, Can AI Help Companies Do the Right Thing? FORBES INSIGHTS (27 March 2019), https://www.forbes.com/sites/insights-intelai/2019/03/27/can-ai-help-companies-do-the-right-thing/#160f03e5345c.

[233] Jessica Davies, *Giovanni Buttarelli on state of GDPR adoption: 'Even ticking a box does not necessarily mean consent is freely given,'* DIGIDAY UK (12 April 2019), https://digiday.com/media/european-commissions-giovanni-buttarelli-state-gdpr-adoption-even-ticking-box-not-necessarily-mean-consent-freely-given/, pointing out that, although there have been "a lot of declarations from businesses including Google, saying they were ready to respect [the GDPR]," the deluge of privacy notices sent, often in obscure language, "were clearly orientated to protect data controllers, not citizens."

[234] SHEILA JASANOFF, THE ETHICS OF INVENTION: TECHNOLOGY AND THE HUMAN FUTURE, Ch 1, (2018).

[235] *Id.*

3. *Using our collective imaginations to build the world we want to live in*

An immediate practical starting point would be to call the data science industry on any visible gaps in its work force, diversity policies, and AI programing biases.[236] At risk is creeping discrimination in various areas of influence from "hiring and housing to criminal justice and the military."[237]

We have the opportunity to shape our ethical technology awareness with those humble masterpieces of design, emoji.[238]

VI.   Conclusion

Emoji are entertaining and enriching signifiers of our human intentions for truncated speech. They stand as beacon, albeit writ small, for the emerging and important ethics debate over how innovation can achieve a human-machine balance that reflects our differences. They serve to test our convictions and strategies for broader diversity campaigns, such as those involving "legal personhood" status for robots.[239] While their social value lies in injecting a measure of humanity into our "abbreviated digital messages of daily life,"[240] emoji are under the microscope in this paper for how they exemplify the ethically trickier questions that arise when digital innovators face demands for inclusion and diversity. We have examined how internet companies and the emoji standardizing body, the Unicode Consortium, are taking steps to mirror in their emoji arrays the diversity in age, gender, culture, race, and abilities of our communities. Through an examination of research results in various fields, we have found that internet technology is not politically neutral and data privacy is not a given.[241]

---

[236] Karen Hao, *AI's white guy problem isn't going away,* MIT TECH. REV. (11 April 2019), https://www.technologyreview.com/s/613320/ais-white-guy-problem-isnt-going-away/, reporting that "Women account for only 18% of authors at leading AI conferences, 20% of AI professorships, and 15% and 10% of research staff at Facebook and Google, respectively." Racial diversity figures are even worse: black employees comprise only 2.5% of the workforce at Google and 4% at Facebook and Microsoft.
[237] *Id.*
[238] Galloway, *supra* note 4.
[239] Ugo Pagallo, *Vital, Sophia,, et Co. – The Quest for the Legal Personhood of Robots,* 9 INFORMATION (2018) 230, www.mdpi.com/journal/information; Ignacio N. Carfone, *Servers and Waiters: What Matters in the Law of A.I.,* 21 STAN. TECH. L. REV. 167 (2018).
[240] Vyv Edwards, *Breaking the Emoji Code,* PSYCH. TODAY (6 April 2018) https://www.psychologytoday.com/ca/blog/language-in-the-mind/201804/breaking-the-emoji-code.
[241] *See further,* Adam Segal et al., *Is an Iron Curtain Falling Across Tech?* FOR. POL. (4 February 2019), https://foreignpolicy.com/2019/02/04/is-an-iron-curtain-falling-across-tech/, reporting the 2019 announcement by US universities (MIT, Cornell, Princeton, the University of California, Berkeley) and the University of Oxford that they are refusing future funding from Huawei, the 5G tech giant, on the grounds that it could pose a threat to national security.

As Oxford University's Luciano Floridi reminds us, the digital revolution transforms our views about values and priorities, good behaviour, and what sort of innovation is socially preferable. Those are the fundamental issues in ethical vigilance. So never mind debating, "What is the next technological disruption?" or "killer app." [242] With protection of our diversity, privacy, and security in the balance, we dare not get distracted.

---

[242] Floridi, *supra* note 152.