Modifying the Universal

Roel Roscam Abbing, Peggy Pierrot, Femke Snelting

In 2015, The Unicode Consortium decided to add five "skin tone modifiers" to the Unicode 9.0 core specifications, a standard that encodes more than a thousand emoji characters. This event triggered a series of reflections and collective actions through which we tried to address how specific entanglements of technology, representation and normativity (re-)appear.

While you could consider emoji a pop curiosity—a light-hearted way to inject some humour, emotions or flirtation into otherwise dry text messages—their popularity has coincided with a rising awareness of issues associated with identity politics, resulting in, for example, the implementation of custom gender options in Facebook.[1] With the surge of instant messaging on both mobile and desktop-based applications, the significance of emoji have moved far beyond smiley faces or emoticons typed in e-mails by combining semicolons and brackets. This text documents a period of collective inquiry into the various mechanisms involved in establishing emoji standards. It follows the discussions and conversations that emerged between us while we were trying to intervene into the process via the official channels for public feedback provided by the Unicode Consortium. The text reflects upon how various concerns developed as we tried to decode what was happening before our eyes.

Emoji are one of many examples where technological systems intensely interact with diverse physical bodies. In this allegedly "post racial" and "post gender" era, we witness a racist and sexist backlash, in terms of the intensified discrimination of minorities and women on one side, and the development of affirmation strategies on the other side. In times of Black Life Matters and with Gamergate still raging, the emoji case shows how we might need to radically rethink what it means to say "everyone". It is no surprise though that the very companies that provide the infrastructures for on-line expression (Facebook, Twitter, Google, etc.) avoid engaging in the issue by employing an a-politicized and egalitarian discourse of diversity, and this with increasing ease and success.

The process of implementing emoji modifiers stages race, gender and technologies in a way that seems exemplary of how identity politics is being transformed from a cultural issue into a technical challenge and eventually into a commercial asset. It shows how "identity washing" operates not only in city marketing or official international politics, but also at the level of inter-personal electronic communication. Throughout this process, the politics of anti-racism and

anti-sexism are being emptied out of their sense and meaning for the sake of a commodified version of equality.

The two subsequent changes to the emoji standard that we report on in this text are an example of how identity politics have been appropriated by global capitalism, and are being used to supplement and strengthen commercial strategies. Our collective inquiry was also an opportunity to test the (im)possibility for intervening into the formation of technologised representation.

Figure 1. Left: Japanese website written and displayed in a Japanese language encoding. Right: the same website displayed with the American ASCII encoding applied.

The Unicode Standard

Unicode is a non-profit organization concerned with universal character encoding standards and responsible for a key infrastructure that impacts all use of text on computers, mobile devices and the web. The Unicode standards are designed to normalize the encoding of characters, to efficiently manage the way they are stored, referred to

and displayed in order to facilitate cross-platform, multilingual and international text exchange. The Unicode Standard is mammoth in size and covers well over 110,000 characters, of which only around 1,000 are technically considered emoji. Despite their relative marginal presence in the set, emoji currently generate most of the public attention for the Unicode standard and the activities of the Consortium.[2]

The process of standardisation within Unicode is presented as open to discussion. The procedure for adding new characters, for example, relies on a public reviewing of issues and feedback, and the Consortium welcomes proposals for new additions. However, voting members that have the power to decide if a proposal is accepted or rejected each pay $18,000 per year.[3] Most of the current individual members work for one of the nine organisations that hold full membership in the Consortium, and seven of these are US-based technology companies: Adobe, Apple, Google, IBM, Microsoft, Oracle and Yahoo. The Consortium primarily communicates in English, which is the language spoken at most companies involved in Unicode.[4] An obvious bias in this so-called universal project can be found at the heart of the standard itself. With English as an exception, many writing systems use special combinations of letters and accents. Only with some effort can they fit into a single character based paradigm that the Consortium decided to be the basic organisational grid of the Unicode standard. As a result, most languages other than English struggle with the standard to some degree (Jacquerye 2015, 261-268).

More generally, the problem of universality begins with the assumption that anything can and should be encoded in symbolic logic (Blas and Cárdenas 2013). The idea of universality underlies all things software and computer related, such as programming languages and internationalisation processes. This latent universality permeates all layers of communication technology and is strongly normative (MacKenzie 2008, 156).

The universal ambition of Unicode itself can be traced back to its inception in the late eighties. As electronic text was increasingly being exchanged online and between language areas, issues emerged when text encoded in one language was shared and read on systems assuming an encoding in another language. Unicode was a response to the incompatible text encoding standards that were proliferating. When different encodings assign the same binary numbers to different characters, this results in illegible documents. The solution, partly made possible by increased computing capacity, was to strive for a single universal encoding which would encompass all writing systems in the world. This encoding can be thought of as a single gigantic table that indexes all available characters to unique binary numbers,

thus circumventing the issue of different encodings with overlapping character assignments.

Maintaining this table and deciding what should be stored in it and where is still the core activity of the Unicode Consortium. It is crucial to understand that the Consortium only deals with the assignment of numbers to characters and not with the way they are rendered. In other words, what Unicode maps is the "idea" of, for example, the Latin capital "A" to a specific binary number. How that "A" itself is represented (italic, Gothic type, big, small, etc.) is the responsibility of glyph and font designers, and not the Unicode Consortium. Furthermore, the standard is non-binding and the actualisation of its universality depends on the willingness of soft- and hardware manufacturers to implement the recommendations of the Consortium.
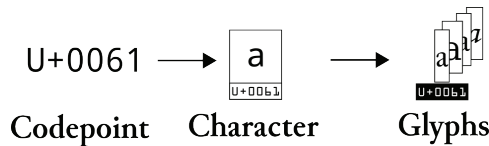
Figure 2. The difference between a code point, a character and a glyph. The Unicode Consortium only concerns itself with the allocation of codepoints to characters and not with glyphs. Pierre Huyghebaert (2015).

Because one face does not fit all

The proliferation of smart-phones and fierce competition between vendors accelerates the attention given to emoji. The cute characters became a surprisingly important argument for buying a new iPhone, iPad or Android phone. In 2015, Apple launched their latest model with a completely redesigned emoji set, now proudly featuring emoji for gay and lesbian couples. The updated Apple designs were breaking with the flat, graphic rendering of emoji images and expressed volume and realism. They cemented the impression that emoji had evolved from visual aids to communicate emotion towards representations of the self. It was also painfully clear that these stand-ins for the human body looked very pale.

Once Apple had launched its high-resolution, pink-hued emoji set, discussions flared up all over the web. The supposed realism of these renderings made people feel "not represented" and subsequently users started to question the yellow base-color of emoji as well. Several petitions asking Apple to increase the diversity in its emoji set attracted thousands of signatures.[6]

The demands to technology giants to fix emoji diversity fell on fertile ground. The protest happened at a moment when US-based technology companies such as DropBox, Pinterest, Airbnb and Twitter

had published statistics on the lack of women and people of colour in their workforces, thereby publicly acknowledging their issues with diversity.[7] Each of the companies had hired so-called "diversity managers" that were tasked with correcting these problems.

The Unicode Consortium, made up of several of these same companies, was put in charge of responding to the pressure.[8] A problem that in essence was caused by an awkward design-decision from Apple, conveniently became a problem to be solved on the abstract level of the Unicode standard. In this meta-context it was clear that the issue could only be addressed through technological means.[9]

Figure 3. Yellow base character with FITZPATRICK TYPE-5 modifier. Screenshot from the Unicode Technical Report 51: http://www.unicode.org/reports/tr51/

The solution that the Unicode Consortium decided to implement was to add "skin tone modifiers", six new characters that could modify only a designated set of emoji that they considered to represent or include humans. Using essentially the same mechanism that is used to create ligatures,[10] these skin tone modifiers allow users to specify any of six different shades of brown for emoji faces. If the device of the sender or receiver has a modifiable icon set available, the emoji is rendered with that shade of brown. If not, the "default" face will be shown next to the selected colour swatch.

The Consortium based the shades on the Fitzpatrick scale, an existing standard developed for measuring the sensitivity of skin to sun exposure. From the little documentation of this surprising choice, we understand that it was believed that the Fitzpatrick scale could pass without triggering a complicated debate on the representation of ethnicity.[11] Using any scale to differentiate people according to the colour of their skin already implies a colonial gaze, since the modelling of "racial types" has been used to de-humanise whoever was not viewed as a white European. Additionally, the Consortium conflated a medical standard for the sensitivity of human skin to UV exposure with a way to represent skin colour.[12] By carelessly merging the two lightest skin tones, Type 1 and 2, into one single modifier, the Consortium underlined that light skin functions outside this colonial gaze.

The introduction of the modifiers meant that the yellow emoji began to function as a white base, with darker skin colours positioned as an add-on. After Apple had started this confusion between yellow and white, it hardly comes as a surprise that the modifiers were seen as

a "blackface" move and a bastardised version of white superiority.[13]

Unlike the rigour that the Consortium usually applies to changes in the standard, the skin tone mechanism was implemented in a relatively short time. The documents available at the Consortium website avoid any reference to possible problematic consequences, and the argumentation for the mechanism comes across as hastily put together. The sub-committee involved with its implementation judged it sufficient to bring in entrepreneur Katrina Parott as an expert, in lieu of the usual dialogue with a supposed user-community. Parrott developed the successful iDiversicon project in response to the on-line protests, but can hardly be considered to single-handedly represent the complex issues of representation that were at stake.[14]

The users' demand for the diversification of emoji points to the way in which on-line representations might operate on the actual through the virtual, and opens up possibilities of representation that are not available in the physical world. But should we see the addition of modifiers as an example of such a potential? Is it a successful form of user-agency, of powerful citizen action? Does the mechanism of skin tone modifiers really bring diversity to the emoji project?
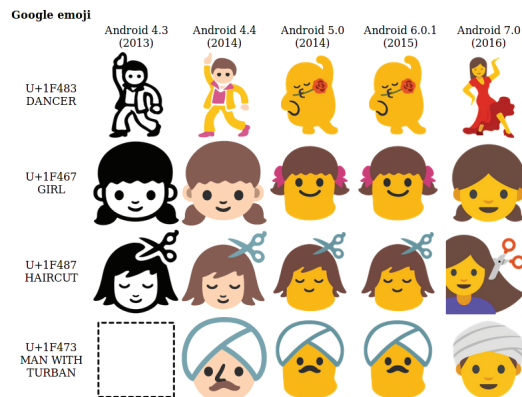

Figure 4. Google's Android has depicted the same emoji characters in different ways over the years.

Cross-platform consistency

In April 2015, as soon as the updated Unicode standard was released, Apple integrated the skin tone options on their iPhones. It was celebrated as a victory that vendors were finally taking diversity into account.[15]

Interestingly, Google did not implement the modifiers on their Android platform and continued to render all humanoid emoji as Barbapapa-style blobs in unrealistic yellow. A Google spokesperson indicated that this was a deliberate choice:

> [Google's] emoji faces are playful and are all about conveying

> *the emotion you're feeling. They aren't designed to look human*
> *or reflect human characteristics.*[16]

The characters in Unicode that are tagged "emoji" are in fact a hybrid collection of images, each with their own visual language and culture of use. It includes icons originally designed to be displayed on Japanese broadcast screens, map symbols used in institutional communication, typographic dingbats, cute decorative elements and e-mail emoticons for inter-personal messages. At first the heightened presence of emoji on communication devices and applications gave prominence to the expression of emotions. Down the slippery slope, emoji have become a pre-coded form of identification. The skin tone modifier mechanism insists that you are what you type. You are typed.

Standardising this solution for diversity had another unexpected normative consequence. Vendors such as Google, who chose to use less humanised renderings of emoji, or Microsoft, who kept with the Unicode design specifications and rendered the characters with grey skin, came under pressure to normalise their set. A widely published research article into the cross-platform use of emoji claimed that different renderings of the characters could lead to misunderstandings (Miller et al. 2016, 9). A smiling blob + modifier did not render in the same way as a smiling face + modifier. The message you send or receive is altered by those different renderings not only in style, but also in meaning.

At this point, Google changed its position, as explained by Jeremy Burge on Emojipedia:

> *While cross-platform consistency was one reason for getting*
> *rid of the blob-people, another was to pave way for support*
> *of skin tone modifiers. It stands to reason that the blobs look*
> *great in yellow, but would look a bit weird if they had skin tones*
> *applied.*[17]

In essence, the implementation of skin tone modifiers forced emoji representations into another level of realism, reduced the possibility for different renderings and eventually had the effect of making all emoji look like Apple Color Emoji. In this context, the space for imagining other characters narrowed dramatically, forcing users into labelling themselves according to pre-set categories of gender and ethnicity.

As long as the emphasis is on the action or emotion expressed by the cute yellow, asexual characters, thoughts about gender, race and ability might go away. But the project to encode diverse representations into Unicode can only work if we assume that emoji are representing humans to begin with. Who or what is the template for this "universal" character? Should these complex questions be in the hands of the Unicode Consortium, specialised in finding technical solutions

for implementing "all the living languages possible"?

We felt that the blobs and grey characters were at least attempts to widen the possibility for representation in digital communication. And now, even that space is gone.
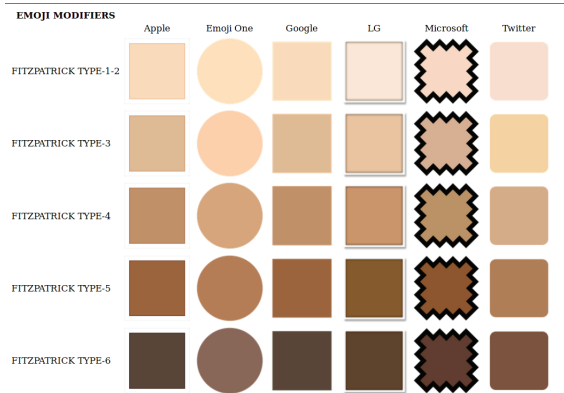

Figure 5. Different implementations of Emoji Modifiers based on the Fitzpatrick scale. The distinction between skin Type 1 and 2 has been conflated into one single "pink" modifier.

Technologies for segregation

In March 2016, Facebook proudly announced their use of ethnic affinities profiling, a thinly veiled form of racial market segregation.[18] For the promotion of the Universal motion picture *Straight Outta Compton*, two trailers were edited. One was targeting "general population (non-African American, non-Hispanic)" and another "African-American" audiences. The commercially successful campaign was the result of a close collaboration between diversity teams in both companies.[19] Despite users' refusal to provide information on their ethnic background, Facebook felt entitled to guess their "ethnic affinity" through analysis and categorisation of the data that they have access to. Segregation based on personal electronic communication had become "marketing as usual".

Emoji skin tone modifiers have of course been used to construct racist comments[20] and there is a documented case of an Instagram search that returns different results depending on emoji with the skin tone modifier applied.[21] Should a Unicode compliant search engine offer to sort results the same way? While Russia investigates if it can sue Apple for their representation of sexual diversity,[22] app stores refuse sex-positive emoji because they do not permit "sexual content".[23] Activists from Turkey were arrested because of their social network accounts, while Libya used Big Data to target its opponents (Manach and Nicoby 2015, 38, 47-48). When social networks can target ads based on the content of messages and user preferences apparently

representing an ethnic profile, where will the use of modified emoji lead us?

Despite the apparent commitment to implement encryption, we have seen Facebook, Google and Apple all too easily comply with police or intelligence services to aid the global war on terror. In such a charged landscape, it is difficult to think about the way standards are being handled without a sense of paranoia, and the willingness of these companies to implement diversity through cute emoji should be met with at least some reservations.

The responsibility for instituting the potential for segregation lies not (only) with the vendor who implements such systems, but also with the one who initiates, negotiates and defines the standard. Unicode cannot neglect to consider such consequences.

2014   2015   2016?
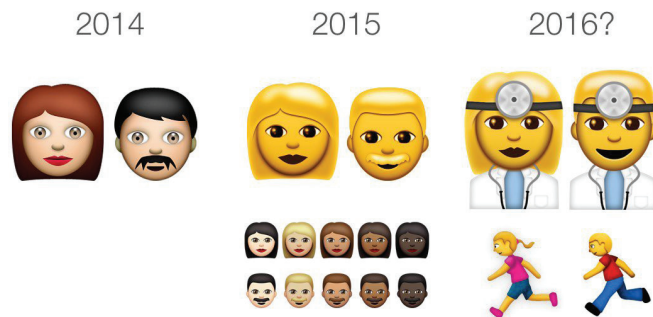
Figure 6. Sketches on emojipedia.org speculating about gender modifiers. Screenshot from http://blog.emojipedia. org/unicode-and-the-emoji-gender-gap/

Pandora's box

In February 2016, following the perceived success of the modifier mechanism, the Unicode Consortium introduced TR#52, a proposal to allow further customisations of Unicode emoji characters.[24] If accepted, it would ensure that gender variants (such as female runners or males raising a hand), hair colour variants (a red-haired police woman) and directional variants (pointing a gun or a crocodile to the right, rather than only to the left) could be encoded.

The mechanism would use the same principle as the skin tone modifiers, allowing only certain emoji to be altered by certain modifiers. But even if one could now type a message with a female police officer or construction worker, why is there no female dancer wearing a sari, or is U+1F473, MAN WITH TURBAN the only man able to wear a turban? What about hairstyles and different traditions of gesturing, let alone representation?[25]

In their proposal, the Consortium insists on using a limited palette

for haircolour because of the "cartoon style" nature of emoji and refers to the US Online Passport application form as the "standard" to follow when choosing this limited palette.[26] The way the U.S. State Department chooses to view and categorise people is a particular expression of how the border control agency sees a person. The aggressive border-profiling that targets young brown men, for example, should not have to make its way into our daily communications. Additionally, the implementation of the proposed gender variants (male, female, neutral) does not address more complex gendered formations such as transgender or transsexuality.

By further expanding the modifier mechanism, the Consortium persisted in addressing diversity through altering a so-called "neutral" base. One only has to imagine the consequences of adding "disability" as a modifier to future Unicode specifications in order to understand this tension. Disability should obviously never be conceived of as a condition of modification to a base-line standard. In practice however, it would have to be implemented exactly in this way. By continuing to naively treat these images as "just like any other character", the Unicode Consortium opened a Pandora's box of implications even wider.[27]

It was with this observation that we arrived at the *Execution* event in Malmö, a three day study session where academic researchers, practitioners and artists from around Europe gathered to question *"the cultural, material and political implications of* execution*"*.[28] We contributed with a talk and a workshop around the question of skin tone modifiers and emoji. At the workshop, participants brought their own expertise and perspectives on the emoji project within Unicode. We proposed to use the space of the workshop to write a collective response to TR52, using the channel for public feedback provided by the Unicode Consortium. After some initial reservations about the way critique would be possible or impossible within the confined space proposed by the Consortium, we began writing as a group.[29]

We agreed on arguing against implementing the proposal based on four points, leaving out a fifth comment on the commercial drive of the Unicode Consortium that we feel is actually at the root of the problem.

    1.   *By positing a "normal" baseline against which difference is to be measured, the mechanism sets up problematic relations between the categories that act as modifiers and the pictographs that they modify.*
    2.   *To express diversity as a "variant" is a reductive response to the complexity of identities and their representational needs.*
    3.   *The Consortium should take into account how, once implemented, the modifiers will function in today's media*

environment. Should Unicode-compliant search engines differentiate results according to modifier categories?

4.　　the proposed modifiers for skin tone and hair colour are both based upon questionable external standards. In the case of the Skin Tone Modifiers, the Consortium has chosen to use the Fitzpatrick scale in an attempt to find a "neutral" gauge for skin tone.

With the comment, we attempted to argue that it does not make sense to fix these issues by finding a less controversial standard for expressing skin tone, or to solve the problem by adding yet more variables, as the mechanism of varying between binary oppositions itself is fundamentally flawed. We felt that the combination of the representational turn and market pressure produced unavoidable and unsolvable problems that the Unicode Consortium tried to respond to through the warped logic of the modifier mechanism. By holding on to the extended modifiers as if they were actually moving in the right direction, the Consortium demonstrated a lack of commitment to actual, complex needs for human communication.

　　　We sent the comment as soon as the workshop ended, a day before the request for comments closed. To our surprise, besides a confirmation of receipt, we did not receive any response. Soon afterwards, we realised that the work on the new mechanism had been suspended:

Work on UTS 52 will be suspended for now in favour of an alternative (ZWJ) approach, focusing on female emoji, that allows for shorter development time and better fallback behavior on older systems.[30]
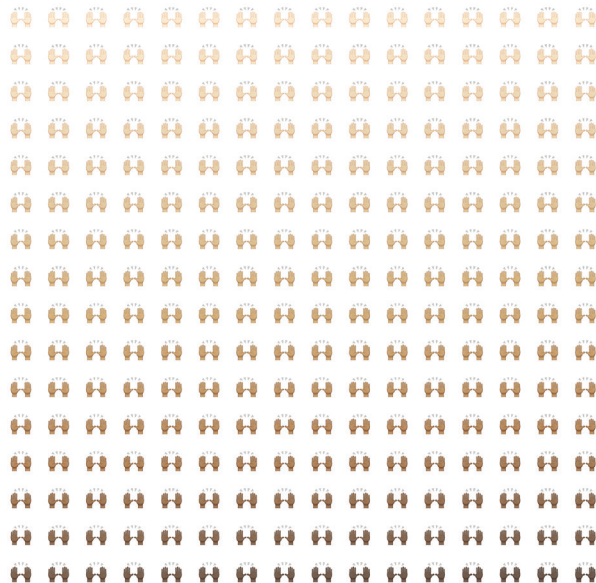

Figure 7. More resolution is no solution

It is all about implementation

But why was the work really suspended? The following is a reconstruction, based on documents available on Unicode.org:

Between the 9th and 13th of May 2016, the Unicode Technical Committee met in San Jose, California in a meeting hosted by Adobe. Among the things up for discussion was the Technical Report #52 on the Emoji Modifiers. In the weeks leading up to the meeting, the members of the Unicode Consortium had asked for and received public input for TR#52 and the proposed meetings, including our comment. On the 10th of May the Emoji Subcommittee and the voting members of the Consortium went through the agenda, reviewing the proposals and comments. This happened during the lunch-break in a so called "ad-hoc session" of which there are no minutes. During this session, Google presented a document which reads as a press release rather than a technical document. It was entitled "Expanding Emoji Professions: Reducing Gender Inequality"[31] and was simultaneously released to the public. *The Guardian* and several other major news outlets ran a story on Google's proposal that same day.[32] After a short break, a consensus was reached to suspend any work on UTR#52 and to pursue "an alternative approach using ZWJ for representing female emoji", referring to Google's proposal.[33]

Technology		**Woman**: 🧑 + 💻 [U+1F469] + [U+1F4BB] **Man**: 🧑 + 💻 [U+1F468] + [U+1F4BB]	Software engineer, person coding, working on laptop

Figure 8. Detail from the Google proposal/press release demonstrating the technological fix where the ZWJ mechanism could be used to quickly create additional diversity without having to deal with the lengthy Unicode process. Screenshot from http://unicode.org/L2/L2016/16160-emoji-professions.pdf

These events interestingly shifted the responsibility and agency for implementing diversity back to the vendors themselves and away from the Unicode Consortium. This time Google had made sure that the spotlight for making diversity happen, pointed on them, and not on Apple. The proposed change was in favour of using the ZWJ (Zero-Width-Joiner) mechanism rather than a "modifier" or modifier tag mechanism, as was originally proposed. The ZWJ is an invisible character already used in Unicode to denote the combination between two separate characters. This is being used for example in the family emoji, where the Unicode characters for man, woman and child are written in combination with ZWJ. It is then up to the vendor to implement this as a family emoji and to decide on how it shows up on a

device. The important shift here is that new emoji can thus be created by making combinations of existing symbols, rather than having to propose new modifiable emoji. This means that any new emoji can be invented (and implemented) by vendors, without having to go through the Unicode Consortium. In effect this is a de-politicization of Unicode, since any move towards representing "diversity" via emoji can now happen through the vendors themselves. Google, for example, "claims" gender with their hyper-mediated introduction of gendered professions and the addition of a rainbow flag.[34]

The event also represents a typical case of do-ocracy, in which a (nominally) open and discursive process of negotiation is sidelined by presenting faits-accomplis. Do-ocracy is a mode of decision-making popular in technical circles for its speed and decisiveness. Having done the task also becomes the justification and validation for it: "Why do we actually use ZWJ emoji? because Google just did it!" Do-ocracy assumes that everyone is able to "act" with the same power and when you want to oppose a decision, you just "do" something else. Whereas Unicode nominally leaves space for individuals and small organisations to participate in the discourse and creation of standards, these individuals and small organisations can never compete with the power of Google do-ocracy. It turns the Unicode Consortium into what so many open standards bodies have become, a rubber-stamping entity to validate unilateral decision-making by large commercial players.

Solutions or diversity and potential for multiplicity

The Unicode Consortium is largely made up of technology giants Apple and Google. It seems that the Consortium offers them an institutional front in a game of smoke and mirrors. The companies hide behind the limitations of the standard if necessary, and break out of its confines when desirable.

Our participatory observation (and practice-based research) of the decision making process at the Unicode Consortium allowed us to study the technical and social implications. On the one hand, we looked at emoji as a language and how it is perceived, and on the other hand, at the processes at work in social and economic terms. As socio-technical objects, emoji are at the heart of a biopolitical framework. They materialise in the space of communication at a moment when representational policies and politics are being reorganised according to ethnic faultlines with the help of, for example, the big-data-ization of real, marketed or perceived identities.

We observed how major economic actors in the field of communication technologies operate, adapt to external constraints or impose their choices. Technical decisions are sometimes taken

without thorough reflection on their implications, whether historical or scientific, let alone on their social consequences. The proposals by the Unicode Consortium are merely techno-centric patches, engineering solutions in response to the increasing complexity of cross-device and cross-cultural computing that actually demands a rethinking of compatibility/translation in terms of difference.

Our collective enquiry was an opportunity to analyse how the Unicode Consortium slid from dealing with cross-language document exchange to a sort of creative political position, without demonstrating any self-awareness of the political nature of its actions. Yet the Unicode Consortium operates as much more than just an IT standardisation of existing languages. Through the encoding of emoji, it creates and normalises a set of representations of humanity. It projects how human bodies must be for them and for numerous other computing companies: industrious, athletic, healthy, stable and classifiable in distinct market categories. As a consequence, possible projections of the body and non-standardised languages are being reduced to stereotypes while sexual or sexually connoted deviant uses of emoji are controlled. Meanwhile, racism and ethnic profiling are not only allowed but encouraged and valued for the sake of their economic potential.

We observed how in our techno-capitalist society identity politics is recycled and reduced to the most congruous, superficial representation of a projected self for marketing purposes. We can only wonder how this will be further used in a changing political context where cultural or "ethnic" profiling of Internet users has become normal. Superficial colour-blindness abounds while a wide wave of reactionary movements—from anti-gay marriage rallies to Alt-rights, tea parties and national fronts of all kind—appear with newly polished faces. Meanwhile, in reaction to radical Islamic bombings all over the world, restrictions of civil liberties are implemented through social media and communications technology. Not at any moment are the colonial assumptions underlying the system of encoding being questioned: the assumption that everything can and should be encoded into the same system.

It is urgent that we develop possibilities for multiplicity, but this means a shift of paradigm. We cannot expect to buy solutions for diversity with the next update because the one-dimensional relation between client and vendor is precisely what produces such superficial implementations in the first place. We need to collectively engage in rigorous discussions about device platforms and the consequences of standardisation processes. Unicode could provide such a platform if it took its own potential more seriously and opened up the process of technology making and standard-forming to the larger public. This

is not about having a voice in which emoji should be included into the standard. It is a plea for getting involved in the way technological systems are being drawn up, and to demand more from communication standards than appeasement or soothing ways to solve difference.

When we get together to finish this text a few months later, after a few hours of browsing Unicode repositories, we find the agenda for the meeting in which our comment should have been discussed. The emoji subcommittee has dismissed it with a cryptic: *"Snelting et al: Too late for ESC*[36] *response"*.[37]

Notes

Unless otherwise noted, images composed by the authors. Image source files from Unicode.org and *Emojipedia*.

1. "When you come to Facebook to connect with the people, causes, and organizations you care about, we want you to feel comfortable being your true, authentic self." Facebook Diversity, February 2014 https://www.facebook.com/photo.php?fbid=567587973337709

2. Interview with Mike Davis, Time Tech, March 2016 http://time.com/4244795/emoji-Consortium-mark-davis

3. Prices are listed in USD only. http://unicode.org/Consortium/levels.html

4. http://www.unicode.org/consortium/members.html

5. http://www.unicode.org/reports/tr17/#CharactersVsGlyphs

6. Two petitions ran simultaneously, http://web.archive.org/web/20140730201055/https://www.dosomething.org/petition/emojis and https://www.change.org/p/groupme-and-emoji-developers-add-more-diversity-to-the-emojis?recruiter=7740596&utm_campaign=twitter_link&utm_medium=twitter&utm_source=share_petitionb The campaign was championed by pop singer Miley Ray Cyrus on Twitter https://twitter.com/hashtag/emojiethnicityupdate

7. Twitter: "We're committing to a more diverse Twitter"

https://blog.twitter.com/2015/we-re-committing-to-a-more-diverse-twitter Apple: "Inclusion inspires innovation" https://www.apple.com/diversity Google: "A diverse mix of voices leads to better discussions, decisions, and outcomes for everyone." https://www.google.com/diversity Facebook: "We are dedicated to creating an environment where people can be their authentic selves" https://www.facebook.com/facebookdiversity/about

8. "When we originally designed emoji, the goal was to be as neutral as possible. The emoji charts that Unicode supports are black and white and other people will interpret them in color for realism ... we struggled with how to deal with [diversity] for a bit because what we didn't want to do is multiply the emoji tremendously." Interview with Mike Davis, Time Tech, March 2016 http://time.com/4244795/emoji-Consortium-mark-davis

9. "Tim (Tim = Tim Cook, CEO of Apple) forwarded your email to me. We agree with you. Our emoji characters are based on the Unicode standard, which is necessary for them to be displayed properly across many platforms. There needs to be more diversity in the emoji character set, and we have been working closely with the Unicode Consortium in an effort to update the standard." Katie Cotton, vice president of worldwide corporate communications for

Apple, March 2014 https://www.yahoo.com/news/the-emoji-diversity-lobby-emoji-design-kevin-119455434306.html

10. A ligature occurs when two or more letters are joined into a single glyph, for example the character æ in English, combining the letters a and e.

11. "The Fitzpatrick scale was developed for use in dermatology, it is also used in cosmetology and fashion design (and) it has the advantage of being recognized as an external standard without negative associations" http://www.unicode.org/L2/L2014/14213-skin-tone-mod.pdf

12. http://www.beauty-review.nl/wp-content/uploads/2014/04/The-validity-and-practicality-of-sun-reactive-skin-types-I-through-VI.pdf

13. "These new figures aren't emoji of color; they're just white emoji wearing masks" https://www.washingtonpost.com/posteverything/wp/2015/04/10/how-apples-new-multicultural-emojis-are-more-racist-than-before

14. Parrott recently added a section "people with disabilities" to her commercially available emoji set. "Because One Face Does Not Fit All" http://www.idiversicons.com

15. "UPDATE: WE WON! You signed the petition. Now Apple is diversifying its Emojis!" http://web.archive.org/web/20140730201055/https://www.dosomething.org/petition/emojis

16. "Android 6.0.1 Emoji Changelog", *Emojipedia,* December 2015 http://blog.emojipedia.org/android-6-0-1-emoji-changelog

17. "Android N Drops Gender-Neutral Emojis", emojipedia, April 2016, http://blog.emojipedia.org/android-n-drops-gender-neutral-emojis

18. "Facebook's ad platform now guesses at your race based on your behavior", *Ars Technic*a, March 2016 http://arstechnica.com/information-technology/2016/03/facebooks-ad-platform-now-guesses-at-your-race-based-on-your-behavior

19. "(Doug) Neil (Universal's EVP of digital marketing) credited part of this (project) to a specialized Facebook marketing effort led by Universal's "multicultural team" in conjunction with its Facebook team. They created tailored trailers for different segments of the population." http://www.businessinsider.com/why-straight-outta-compton-had-different-trailers-for-people-of-different-races?r=US&IR=T&IR=T

20. "Apple's ethnic emojis are being used to make racist comments on social media. They were intended to promote harmony, but have achieved the opposite" *The Independent*, April 2016 http://www.independent.co.uk/life-style/gadgets-and-tech/features/apples-ethnic-emojis-are-being-used-to-make-racist-comments-on-social-media-10182993.html

21. http://rhizome.org/editorial/2015/dec/08/uif618-your-ascii-goodbye

22. "Russia could be investigating Apple over 'gay propaganda' because of emoji" *Silicon Republic*, September 2015 https://www.siliconrepublic.com/companies/apple-under-investigation-in-russia-for-same-sex-emoji-reports

23. 'We'd love to build an app with all the Flirtmoji, but the Google Play Store and Apple App Store don't allow (see: censor) all sexually explicit content.' https://www.flirtmoji.co/pages/faq

24. "Proposed Draft Unicode® Technical Standard #52" http://www.unicode.org/reports/tr52/tr52-3.html

25. "In addition to gender

bias, the clothing emoji are biased towards western and Japanese culture, so clothing items from other cultures might also need to be considered for inclusion. I think this is only the beginning of a discussion to make clothing items more gender & culturally inclusive, or to decide to what extent that is a goal." www.unicode.org/review/pri321/

26. http://www.unicode.org/reports/tr52/tr52-1.html#Introduction

27. When discussing the issue with Hin-Tak Lueng, developer of a font-validator aiming for full Unicode coverage, responded: "It was like they scratched an itch and then their whole skin fell off" Hin-Tak Leung at Libre Graphics Meeting London, April 2016

28. Executions: conversations on code, politics & practice, Malmö University, Malmö, Sweden, April 2016 http://softwarestudies.projects.cavi.au.dk/index.php/*.exe_(ver0.2)

29. The comment was collaboratively written by Geoff Cox (Associate Professor, Aarhus University, Denmark), Linda Hilfling Ritasdatter (PhD candidate, Malmö University), David Gauthier (PhD candidate, University of Amsterdam), Geraldine Juárez (MFA candidate, Valand Academy, University of Gothenburg, Sweden), Marie Louise Juul Søndergaard (PhD candidate, Aarhus University, Denmark), Helen Pritchard (Research Fellow, Goldsmiths, University of London), Susan Schuppli (Senior Lecturer, Goldsmiths University of London), Molly Schwartz (PhD candidate, Malmö University), Eric Snodgrass (PhD candidate, Malmö University), Winnie Soon (PhD candidate, Aarhus University Denmark), Magdalena Tyzlik-Carver (Research Fellow, University of Sussex, Brighton, UK). Available here: http:// possiblebodies.

constantvzw. org/

30. http://www.unicode.org/review/pri321/

31. http://www.unicode.org/L2/L2016/16160-emoji-professions.pdf

32. "Google proposes new set of female emojis to promote equality", *The Guardian*, 11 May 2016 https://www.theguardian.com/technology/2016/may/10/female-emojis-google-equality

33. http://www.unicode.org/reports/tr52/

34. http://blog.emojipedia.org/gendered-emojis-coming-in-2016/ and http://blog.emojipedia.org/rainbow-flag-emoji-details-published/

35. "Instagram blocks 'offensive' eggplant emoji hashtag", *CNN,* April 2015 http://money.cnn.com/2015/04/29/technology/eggplant-instagram-offensive/index.html

36. ESC = Emoji SubCommittee
37. http://www.unicode.org/L2/L2016/16130-emoji-subcom.pdf

References

Blas, Zach, and Micha Cárdenas. 2013. "Imaginary computational systems: queer technologies and transreal aesthetics." *AI & Society* 28, no. 4: 559–566.

Jacquerye, Denis. 2015. "Unicodes." In *I think that conversations are the best, biggest thing that Free Software has to offer its user*, edited by Femke Snelting and Christoph Haag. Brussels: Constant.

MacKenzie, Adrian. 2008. "Internationalization." In *Software Studies: A Lexicon*, edited by Matthew Fuller. MIT Press

Manach, Jean-Marc, and Nicoby. 2015. *Grandes oreilles et bras cassés*. Futuropolis

Miller, Hannah, Jacob Thebault-Spieker, Shuo Chang, Isaac Johnson, Loren Terveen, and Brent Hecht. 2016 "'Blissfully happy' or 'ready to fight': Varying Interpretations of Emoji." *ICWSM'16.* Menlo Park, CA: AAAI Press