The gender binary will not be deprogrammed:

Ten years of coding gender on Facebook

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Abstract

A February 2014 iteration of Facebook's software upgraded the number of options for gender identification from two to sixty. Drawing on critical theoretical approaches to technology and insights from science and technology studies, this iteration is situated within ten years of software and user modifications that pivot around gender. Analysis follows the dynamic materiality of an antagonistic oscillation between competing constructions of gender as both a rigid binary and a fluid spectrum. This article argues that the relationship between Facebook's software and its users is deeply structured by the gender binary while simultaneously productive of non-binary possibilities. Three findings are revealed: (1) an original programming decision to store more than two values for gender in Facebook's database became an important fissure for non-binary possibilities; (2) gender became increasingly valuable to the system over time; and, (3) at both deep and surface levels, neither the binary nor spectrum have been fully materialized.

Keywords:

socio-technical, critical theory, gender binary, code, social media software, queer theory, transgender, antagonism, database, software-user relationship

Introduction

On February 13th, 2014 mainstream news organizations reported a change to popular social media site Facebook. Instead of two options for users to choose from when identifying their gender ('male' and 'female'[1]), users were given a third option ('custom') that, if selected, offered 58 additional options to choose from.[2] A few examples include agender, gender nonconforming, genderqueer, non-binary and transgender (Goldman, 2014). Before confirming a 'custom' gender selection, users are also requested to select a preferred pronoun: 'he,' 'she,' or 'them.' Reactions have ranged from cautious optimism and joy to surprise, confusion, and mockery. The former stemming largely from LGBTQ organizations, signalling practical implications for non-binary users, and the latter stemming largely from news anchors and anonymous online commenters, signalling hegemonic constructions of gender as a binary. This is not the first time that gender-related concerns have led to modifications to Facebook's software, but this particular modification calls attention to a broader socio-cultural context in which ideological struggles take place over how gender ought to be conceptualized. Viable and unviable gender subjectivities are configured through these struggles, and what is deemed intolerable becomes an easy target for discrimination and violence.

Just as there is more than one way to conceptualize gender in society, there is more than one way to code gender in software. By juxtaposing society and software my intention is to emphasize technological design as a social act, and, by doing so, join the rich scholarly traditions embedded in science and technology studies, software studies, and critical code studies. With the help of these scholars we have come to see technology as 'never merely technical or social' (Wajcman, 2010: 149). Similarly, since '[c]ode is never found; it is only ever made, and only ever made by us' (Lessig, 2006: 6) it is clear that 'lines of code are not value-neutral' (Marino,

2006). Like any programmable field, gender does not necessarily remain fixed over time. Any of the countless software iterations that take place could incorporate a different way of coding gender. From this perspective it is useful to understand technology as 'an "ambivalent" process of development suspended between different possibilities' (Feenberg, 2002: 15). A coding practice that reproduces a binary of male and female echoes the societal status quo and is in line with other practices that also 'code' gender, such as sex or gender identification on surveys, sign-up forms, or official documents. Facebook's recent alternative to the binary – 60 options – represents just one of many programmatic possibilities, all of which diverge in valuation. A range of actors have vested interests in particular possibilities, including designers, programmers, users and non-users, advertisers, and developers of external applications, for reasons ranging from clean design to data collection and monetization. This article maps the ways in which design decisions related to particular social constructions of gender become embedded and materialized in Facebook, becoming powerful, in Foucault's (1982) sense, as a productive force in the broader software-user relationship. It is the social power of Facebook's code that underlies this analysis, contributing to a broader understanding of software as yet another structural arena through which social life is regulated.

It is the oscillation between contradictory social constructions of gender that is this focus of this ten-year analysis of the relationship between Facebook's software and its users. To follow the oscillation I positioned a rigid binary and a fluid spectrum[3] as two opposing ends of an antagonism to be analyzed. My aim is to recognize their simultaneous existence and structuration of social life while also assessing the possibilities for gendered life that are severed or made possible and mutual shaped by users and software designers. This choice of analysis is guided by critical internet scholar Christian Fuchs' (2009) urging of academics to identify and analyze

antagonisms: 'contradictory tendencies that relate to one and the same phenomenon, create

societal problems and require a fundamental systemic change in order to be dissolved' (2009:

70). The result is a dialectical analysis of the opportunities and risks that are directly related to

the development of the antagonism over time.

I argue that the relationship between Facebook's software and its users is deeply

structured by the gender binary while simultaneously productive of non-binary possibilities. The

binary exists and does not exist at the same time. While the gender binary has dominated since

the original iteration in 2004 and continues to the current 2014 iteration, the possibility of

stretching outside of the binary has always been materialized in the code. This trajectory is

emblematic of the complexity of Facebook as a sociotechnical artefact. The binary continues to

structure Facebook's sign-up page (where binary gender identification is still mandatory), profile

pages (where the binary is positioned as 'normal,' with 58 custom options as alternatives), and

database (where users are reassigned to a binary). Simultaneously, despite its role as a structuring

agent for Facebook's gender-related programming, the binary has never fully materialized. On a

very technical level, deep inside the software, the database field type for gender was

programmed with the capacity to store more than two values (male, female, and undefined) ever

since Facebook's inception in February 2004. This early programming decision allowed users to

leave their gender undefined but also meant that Facebook's code always afforded more than a

binary. Meanwhile, non-binary configurations of gender have also always existed, embedded

within the software and made possible through user modifications that include hacking the

HTML code. When both surface and deep levels of the software are examined (the graphic user

interface and the database), it is clear that gender became increasingly valuable to the system

over time. Also, neither the binary nor spectrum have been fully materialized. Instead,

Facebook's software has always existed between the two opposing ends of the antagonism analyzed here.

The next section considers surface and deep levels of software and social implications entangled in varying levels of visibility. A section clarifying my methodology follows, and then I move on to a detailed analysis of the ten-year software-user relationship. The discussion and conclusion summarizes the oscillation of this antagonistic analysis between a binary and spectrum, and explores power, alternative programmatic possibilities, and broader implications of gender coding.

The visible invisibility of software and its regulation of viable genders

The February 2014 software modification that added 58 new gender options represents one tweak in Facebook's ten-year history of incessant iterating. While this change received news coverage, many more do not. Some changes are detectable through the user interface while many more operate 'under the hood,' embedded in elements of the software that are not as readily accessible. For instance, a database is the most vital component of social media software and yet it is unfamiliar and invisible to most users. This is reminiscent of the opaque/transparent nature of code that Chun (2013: 15) explains as 'invisibly visible, visibly invisible.' Not only is code hidden from view, but it also requires a level of technical expertise to comprehend. According to Chun, computing's appeal rests on its 'combination of what can be seen and not seen, can be known and not known,' which 'makes it a powerful metaphor for everything we believe is invisible yet generates visible effects' (Chun, 2013: 17). The 58 new gender options have already generated visible effects, such as public discourse on the topic of non-binary genders, and obvious implications for users wishing to more accurately represent their gender on the site. At

the same time, the changes to the surface that sparked these visible effects are not reflected in deeper levels of the software.

While increased options for gender identification serve visible ends by making other identities more viable (even if only technically), it is also important to recognize the invisible ends they may also serve. Increased documentation and surveillance of vulnerable populations is one largely invisible, yet potentially destructive effect. Economic incentives is likely another. Collecting information about gender is typically 'framed as being valuable' for users yet the system also benefits from this data (McNicol, 2013: 203). Facebook is a for-profit social media site and increased granularity is conducive with an economic model that is dependent on information sharing, and the increased page impressions and advertisements that follow.

While an economic analysis is out of the scope of this article, it is clear that the gendered elements of Facebook's software are embedded within broader systems based on economic exploitation and socio-cultural contexts that subscribe to hegemonic gender messaging. By focusing exclusively on gender this analysis veers away from Fuchs' (2009, 2011) Marxist-inspired analyses that position economic exploitation as the fundamental mediator of all axes of oppression. For instance, Fuchs investigates internal contradictions of informational capitalism, such as the antagonism between cooperation and competition. Of course not all critical theorists are convinced that economic exploitation ought to be prioritized. As just one example, Fraser (2003) insists on assessing both 'recognition' and 'redistribution,' twinning class and gender oppression as equally central.

Between the binary and spectrum – either end of the antagonism analyzed here – there is much more at stake than a concern with beliefs about gender. Social constructions of gender regulate what is permissible. Queer theory unpacks these issues by focusing on the normalizing

logics that regulate social life. While queer theorists have tended to speak to the code of language, a 'resistance to the regimes of the normal' (Warner, 1993: xxvi) can also be applied to the code of software. Feenberg (2005: 47) argues that '[t]he technical code is the rule under which technologies are realized in a social context with biases reflecting the unequal distribution of social power.' By extending queer theory to the realm of software, Facebook's code can be interrogated as a social structure that contributes to the perpetuation and normalization of a particular construction of gender. The resulting inequality is evident when considering examples of violence directed towards anyone who fails societal expectations embedded in binary gendered performances. Butler (2004) uses these examples to demonstrate how society is deeply invested in defining who is human and who is therefore permitted to live. Lives that do not conform to a binary of masculine and feminine and lives that contradict a heteronormative composition of gender and sexuality are under threat of gender-based violence. As Butler puts it, 'This violence emerges from a profound desire to keep the order of binary gender natural or necessary, to make of it a structure, either natural or cultural, or both, that no human can oppose, and still remain human' (2004: 35). As a result, the only permissible identities are heterosexual men and heterosexual women. Of course this rigid binary easily falters in the face of complex lived realities, yet this is part of the paradox of the antagonism between the binary and spectrum (Monro, 2005). Butler's (2004: 8) 'question of what maximizes the possibilities for a livable life, [and] what minimizes the possibilities of unbearable life, or, indeed, social or literal death,' is central to this endeavor, despite social media software's limited role in the broader social scheme of gender regulation. Fuchs' (2008: 6) emphasis that critical theory 'starts from the judgment that human life is livable or can and should be made livable' also frames this analysis, positioning gender fluidity as one path towards permissible life.

Methodology

Guided by Chun's (2013: 188) musings in a footnote discussing Microsoft Word, we can ask

what constitutes Facebook. Is Facebook its source code? Its database? Its user interface? Its

users? Its designers, programmers, advertisers, funders? A company? A social phenomenon? It is

inevitably an assemblage of all of these things but from a methodological point of view, what is

accessible for research? As a user of the site, the current iteration of Facebook's user interface is

readily accessible. As such, the sign-up page, profiles, and news feed were examined for

instances where gender is displayed and assigned to users. Since analysis of the oscillation

between the binary and spectrum is only made visible through historical analysis, previous

iterations of Facebook's user interface over the past decade (2004-2014) had to be collected.

Facebook is inaccessible through archival engines like the Wayback Machine. As a result, I

conducted onerous searches that required creative terms and multiple search engines. Screenshot

images were particularly useful in this endeavour. An academic literature search for

'thefacebook' (the original name of the software) also offered sparse but useful information

about mandatory fields in early versions of the site.

Access to the database was more complicated, particularly since Facebook's software is

not open-source. However, in 2006 Facebook became the first major social media service to

open access to its Application Programming Interface (API) (Yadav, 2006). APIs are software-

software interfaces used to give third-party developers access to a site's code so that they can

create programs that share and exchange information. As Bodle (2011: 335) argues, Facebook's

use of open APIs in particular has been geared towards 'achiev[ing] market dominance and user

dependency.' Facebook's Graph API Explorer was a key tool through which I was able to query

the database to gain information and make inferences about how gender is stored. On February 27th, 2014 I also conducted a telephone interview with Lexi Ross, a Project Manager at Facebook who was involved in the 'custom gender project.' Ross was able to confirm technical aspects of this analysis.

Finally, the focus on the software-user relationship emphasizes communicative moments that involve a much wider range of invisible actors than the particular user engaged in the 'conversation.' This approach offers insight into the ways in which software configures and constructs gender and the ways in which the software, as Bucher (2012) argues, functions as a nonhuman actor. The following analysis is organized into five categories: registering gender from 2004-2014, profiling gender in 2004, gendering pronouns in 2006 and 2008, gender hacking from 2008-2014, and customizing gender in 2014.

Registering gender from 2004-2014

When a page appears to reload after clicking 'submit' on an online registration form, most users would respond by scanning the page for an error message. They may not imagine themselves as engaging in a relationship with the software, but who else responded to their keystrokes and mouse clicks, forcing them to scan the page? It was the software that pointed out inaccuracies or incomplete fields in red text. Of course it is also a litany of human actors embedded in a wider socio-cultural system that inspired this solitary response, and indeed programmers who literally entered the code, along with superiors who managed these decisions. Nevertheless, in these precise moments any other actors are merely a spectre – it is the software and the user who are ultimately interacting.

Over the past ten years, the sign-up page for Facebook has changed several times, and it is changes to the code that determines how the sign-up page will be displayed in a user's browser: which information to request, which fields must be completed, and which error messages to display. Storing a binary gender for users is a practice that only became significant over time. When Facebook was first launched in 2004 the sign-up page was designed to ensure that only students at Harvard could join. The original four fields were name, student status,[4] email address, and password. Over the next few months more universities across the United States were offered access and by September 2006 anyone over the age of 13 with a valid email address could join.[5] Gender did not exist as a field on the sign-up page until 2008: 'I am' was followed by a drop-down list with 'Select Sex/Male/Female.' This field was mandatory and it has continued to be mandatory ever since. In the February 2014 iteration (which appears to be unchanged since 2008), the only significant difference is that the mandatory 'sex' field has been replaced with two radio buttons labeled 'male' and 'female.' In response to an interview question regarding the reason why users must indicate a binary gender to join the site before they can access the 58 new options, Project Manager Lexi Ross said: 'There are some complex issues with the sign-up page but it's something we can consider in the future' (27 February 2014).

Year	Sign-Up Page		
	Gender Field	**Description**	**Mandatory**
2004			
2005	No	N/A	N/A
2006			
2007			
2008			
2009		'I am: Select	
2010	Yes	Sex/Male/Female'	Yes
2011		(drop-down list)	
2012			
2013		'male' & 'female'	
2014	Yes	(radio buttons)	Yes

Figure 1. Timeline of Gender-Related Changes to Facebook's Sign-Up Page

Of course the implication of these design decisions is that it is technically impossible for a non-binary user to register. If a user tries to evade the gender question, the software will respond with the following: 'Please select either male or female.' A user might resolve the technical error by misrepresenting their gender, having likely encountered similar scenarios before. However, Facebook's Statement of Rights and Responsibilities is flagged immediately above the 'Sign Up' button: 'By clicking Sign Up, you agree to our Terms.' Section 4, titled Registration and Account Security, requests that real names and information is provided, and 4.1 explicitly states: 'You will not provide any false personal information on Facebook, or create an account for anyone other than yourself without permission' (Facebook, 2013). While the spirit of the Terms is up for interpretation, Terms are subject to change, and (un)intentional violations occur regularly, it is important to consider the broader context of online sites seeking 'authentic selves' (Associated Press, 2014).[6] Facebook's (former) Chief Privacy Officer, Chris Kelly, had once argued that 'Trust on the Internet depends on having identity fixed and known' (Kirkpatrick, 2010: 16) and Facebook creator Mark Zuckerberg has said that 'Having two identities for yourself is an example of a lack of integrity' (Zimmer 2010). These perspectives regulate programmed possibilities that become materialized in code.

Profiling gender in 2004

Profile pages fundamentally structured Facebook's original 2004 design. After registering an account, users would predominantly spend time navigating to profile pages of other users in their network, prompted by the affordances of the software's design. The only mandatory profile fields in 2004 were 'name, e-mail address, and user status [student/staff, etc]' (Jones & Soltren,

2005). While a user's name was valuable to the system, facilitating search and navigation functions, gender was not particularly valuable to this original design; it was simply another profile field, coded as non-mandatory. This is evident from the 2004 user interface, which allowed users to leave the 'sex' field 'undefined,' in addition to a binary of female or male. As a result, the gender field type in Facebook's database was programmed to accept more than two values: 1 = female, 2 = male, and 0 = undefined. Eventually users were also able to hide their gender from their profile.

Determining which construction of gender is enacted through Facebook's code becomes theoretically interesting at this juncture. Recall that gender was absent from the sign-up page prior to 2008. Therefore, in 2004, while it was possible to register as a non-binary user, it was impossible to indicate a non-binary gender on a user profile. Of the programmatic possibilities embedded in these early profiles, users can binary ID or leave the 'sex' field blank. The latter possibility omits binary gender information on the user interface but the transgression goes no further. In the database, however, the software responds more actively to this transgression by storing a value of zero in the database. While a zero may be inadequate in many ways, it is still a value existing outside of the binary of ones and twos. The material reality of three accepted values in the database transgresses a rigid binary, yet falls short of a fluid spectrum, positioning the database somewhere in-between the two opposing ends of the antagonism structuring this analysis. From a user perspective, the materiality of transgressing the binary on the level of the user interface is limited while the materiality hidden in the database is opaque and out of reach. Considering the technical expertise required to query the database and draw conclusions based on the information returned, information about how gender is stored in the database is inaccessible to the average user. Therefore, an average user seeking to transgress the binary by

omission would be unaware that leaving the 'sex' field blank actually transgresses the binary on a deep level of the software, in a way that is not apparent on the software's surface. Overall, this coding practice structurally regulates gender as a binary since the user interface does not offer non-binary gender options to select – in fact it prompts users to identify in a binary manner by presenting male and female as the only seemingly valid options. Simultaneously, the non-mandatory coding of the 'sex' field and subsequent database storage of a non-boolean field type (enabling more than two values) creates an important fissure for non-binary possibilities.

Gendering pronouns in 2006 and 2008

Without access to an archive containing every iteration of Facebook's user interface, it is difficult to be certain when pronouns became an important structural element in Facebook's architecture. However, my research has concluded that September 5, 2006 is the likely date. A major change to the user interface was launched at this time, which introduced the 'mini-feed' on user profiles and the 'news feed' as a new default home page, completely separate from user profiles. This development prompted a shift in use given the newly created affordance of scanning recent 'actions' by fellow users ('friends' added to their network, comments written, photos uploaded, applications added, etc.). The 'news feed' collected and broadcasted user 'actions,' producing a dynamic list of 'news' based on a user's network of 'friends.' Over time, Facebook began algorithmically curating this 'news' in ways that are opaque due to secrecy surrounding the algorithms[7] buried in the code.

Descriptions of user actions became a central component for this new design. In an attempt to create grammatically correct descriptions, some actions required gendered pronouns. For instance, 'Tom commented on his photo.' It is at this juncture that the software was programmed

to use 'them' for users who had not selected a gender on their profile page. This 'solution' was revisited less than two years later. On June 27, 2008, a post on Facebook's company blog noted that growth in non-English users and pronoun translation problems had arisen, and the neutral 'them' pronoun was grammatically problematic: 'Ever see a story about a friend who tagged "themselves" in a photo? "Themselves" isn't even a real word' (Gleit, 2008). As an aside, the singular 'they' is, in fact, commonly used in trans and queer communities and has an extensive history in the English language (Santos 2013). There was also a concern expressed in the Facebook post for users who may be misgendered in languages other than English: 'People who haven't selected what sex they are frequently get defaulted to the wrong sex entirely in Mini-Feed stories' (Gleit, 2008). Of course, selecting 'sex' is only possible if one's 'sex' is programmed as one of the selections, which means non-binary users have no option but to be 'defaulted to the wrong sex entirely.' Yet, interestingly, recognition of wider problems associated with the gender binary were also expressed in the post:

> 'We've received pushback in the past from groups that find the male/female
> distinction too limiting. We have a lot of respect for these communities, which is
> why it will still be possible to remove gender entirely from your account, including
> how we refer to you in Mini-Feed.' (Gleit, 2008)

Therefore, at this juncture the design decision was not to extend programmatic possibilities beyond the binary. Mention of removing 'gender entirely,' however, was only possible for a subset of users, as the following analysis will reveal, and only possible on the surface level of a user's account, since a value for gender would always be stored in the deep level of the software's database. The pronoun 'them' would continue to be accessible for this subset of users.

The more intriguing design decision that likely instigated this blog post specifically targeted the subset of users with an undefined gender:

'we've decided to request that all Facebook users fill out this information [about their "sex"] on their profile. If you haven't yet selected a sex, you will probably see a prompt to choose whether you want to be referred to as "him" or "her" in the coming weeks.' (Gleit, 2008)

Shortly following this announcement, a user posted a screenshot of this prompt, received upon log-in (httf, 2008):
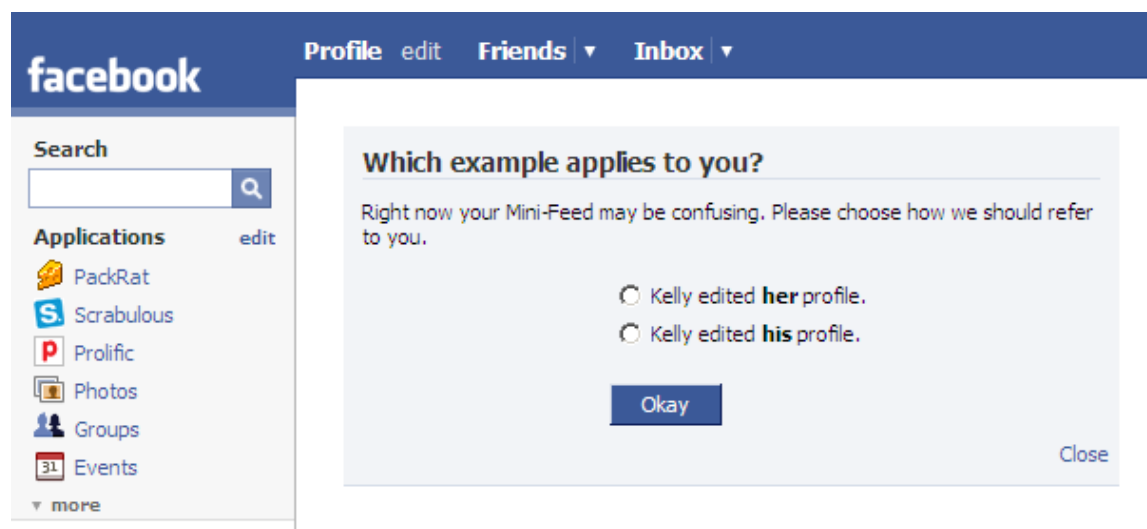
Figure 2. Request to select gendered pronoun, 2008

This particular user opted not to select a radio button, clicking 'close' in the bottom right corner instead. Reasons for refusing a binary pronoun include a lack of preferred pronouns (they, ze, zir, among others) and/or a more general rejection of further surveillance and opaque data collection. Yet in the midst of this communicative moment between the software and user, two programmatic consequences were concealed. Selecting a pronoun equated to: (1) binary gender assignment in the database, and (2) assignment to an account type with restricted access to database values. To explain the latter, it is important to understand that design changes related to

gender that took effect in 2008 created a two-tiered user database. I will refer to the subsets as 'legacy users' and 'binary-ID users.' A legacy user must meet the following requirements: (a) joined the site prior to July 27, 2008, and, at the precise moment when the software was identifying which users to prompt, had (i) an undefined gender selected, and opted to (ii) refuse a binary pronoun, selecting 'close' instead. For various reasons, and at any time, users might alter the gender field on their profile, but a user's legacy status would be revoked if they chose to binary ID after July 27, 2008. A revoked legacy status meant assignment to the binary-ID user tier. Binary-ID users were also produced by the software if they fulfilled one of the following requirements: (a) joined prior to July 27, 2008 and selected male or female on their profile at the precise moment that the software sought out undefined users for pronoun prompts; or (b) joined prior to July 27, 2008 and had an undefined gender selected but responded to the software's prompt by selecting a binary pronoun; or (c) joined after gender became a field on the sign-up page, and therefore forced to binary ID. To reiterate, legacy users could access the zero otherwise available as a programmatic possibility, but binary-ID users could not – at least until users discovered how to hack the HTML code, which is the subject of the next section.

Gender hacking from 2008-2014

As we have already discovered, gender only became an increasingly significant variable in Facebook's code over time. The first time the gender binary became a dominant, regulating force was in 2008 when binary registration became mandatory. It is productive to consider changes to the code in 2008 as a design intervention. Users that registered prior to this intervention had three options to choose from (male/female/undefined), even if the undefined category was not a particularly transparent choice. Suddenly, being a legacy user mattered: users who joined prior to

2008 could maintain their pre-intervention selections (such as 'undefined' gender), even if those selections no longer existed in the new software iterations. After the 2008 intervention there was no affordance for users to set their value to 0 in the database. Only 1 (for female) or 2 (for male) was possible for binary-ID users, even though legacy users could maintain their 0. A legacy user's power over the software was ultimately precarious: their status would expire if they suddenly selected male or female, restricting their access to the full range of programmatic possibilities for gender. It is for these reasons that we can view this 2008 change as a design intervention and productive force geared towards the normalization of the rigid gender binary.

Nonetheless, this design intervention was limited by two technical issues: (a) the field type assigned to gender in Facebook's original iteration that afforded three values (1, 2, and 0), and (b) a loophole that users exploited to hack their gender. The following scenario involving Facebook user Rae Picher is illustrative. Picher falls into the category of a legacy user who had not selected a gender during a time when Facebook's software afforded this possibility. As Picher explains in a public post on April 27th, 2011, 'I recently lost my carefully preserved genderless status on Facebook due to an April Fools' Day joke where I came out as a heterosexual woman' (Picher, 2011). Picher's April Fools' Day joke was constrained by the overarching software-user relationship: Picher selected 'female' and the software 'replied' by replacing the former value of 0 with a value of 1 in the gender field associated with Picher's user ID in the database. An unintended effect of this 'dialogue,' unbeknownst to Picher at the time, was the erasure of Picher's former status as a legacy user. In the context of posting what Picher refers to as a 'PSA' for other users, Picher explains what happened next:

> 'When I tried to switch BACK to not having my gender identified, Facebook threw a
> hissy fit and demanded that I binary-gender ID for them, and proceeded to use

gendered pronouns for me on my wall and in my friends' news feeds. Now that's just

not cool.' (Picher, 2011)

Picher provided a brief guide for users wishing to hack their gender, along with a video tutorial

originally posted by a different user. Using a web browser's 'Inspect Element' feature, users can
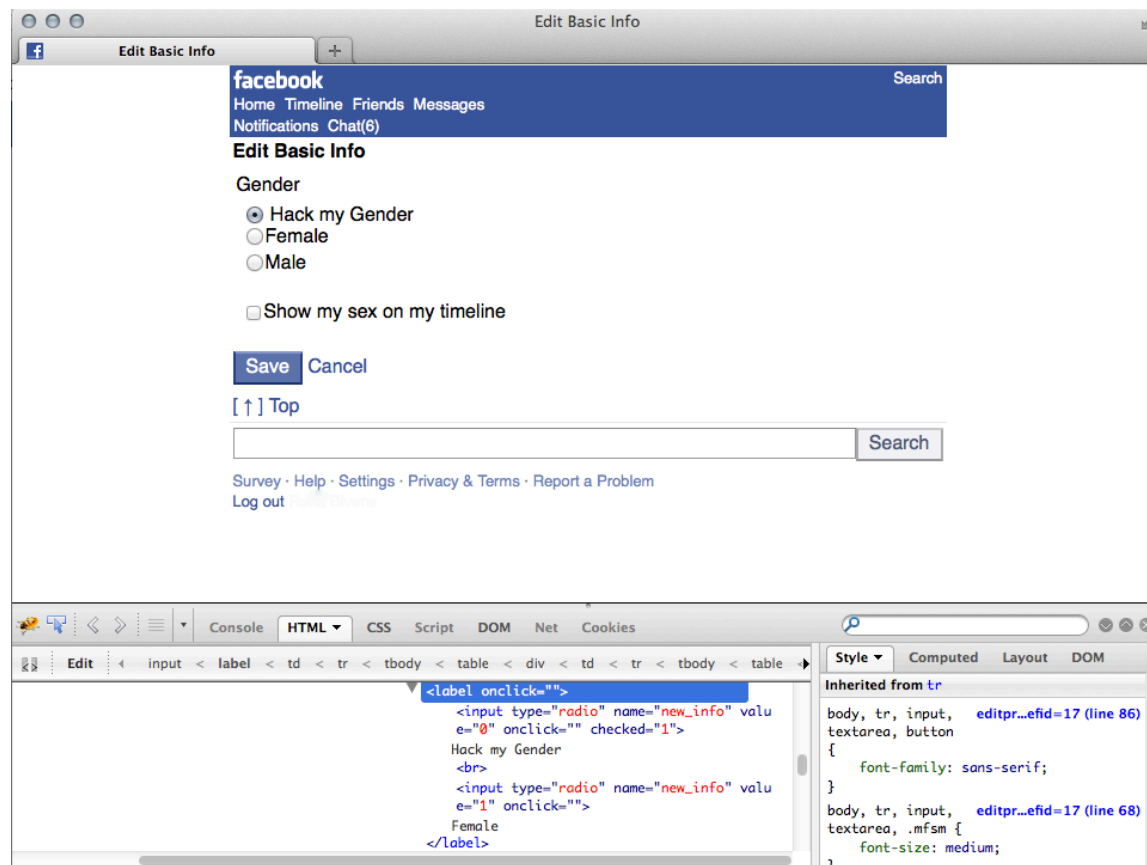
make the code for gender visible.

Figure 3. Hacking the Gender of a User's Profile using HTML code

Once this deeper level of the software is made visible, users can edit the HTML code to add a

third option ('Hack my Gender' is shown as an example above) and change the value stored in

the database to 0. This technical loophole was patched by Facebook's programmers by the time

the 58 new options were released in 2014.

Customizing gender in 2014

The February 2014 change discussed at the outset of this article represents the most significant

modification to gender in Facebook's ten-year history, at least from a user interface perspective.

Recall that users can now choose from either the binary (male/female) or a 'custom' list of

genders. Still far from a fluid spectrum, 'custom' becomes a third option, positioned only in

relation to a normalized binary (McNicol, 2013). Approaches to coding gender can replicate

hierarchies of gender, regulating social life by inscribing the binary as dominant and 'normal'

while any 'other' genders are positioned somewhere else, only visible after the user clicks on

'custom.' When 'custom' is selected, a text field is presented. Upon typing into the field, a list of

possible gender options based on the inputted text is revealed, with 58 options in total. Users can

select more than one custom gender. While users can input genders that have not been coded as

possibilities, the software will not save the input – only the 58 pre-selected options are

permissible.

Prior to the February 2014 change, Facebook's software assigned a pronoun on behalf of

users based on their gender selection (male = he; female = she; undefined = them). Since

February's iteration, users who select a custom gender must also select a preferred pronoun

(he/she/them), whereas users with a binary gender selection continue to have software-assigned

pronouns (he or she). While this modification moves beyond a rigid binary and certainly affords

many more options for gender identification and expression, 58 software-defined options and 3

pronouns remain inherently restrictive when juxtaposed with a fluid spectrum of limitless

possibilities.

Beyond the surface, how is gendered data now stored in Facebook's database? To answer

this question, the Graph API Explorer tool became particularly valuable, facilitating database

queries that retrieve stored data from user accounts. When I queried the names and genders of

my Facebook 'friends,' information was returned in the following format:
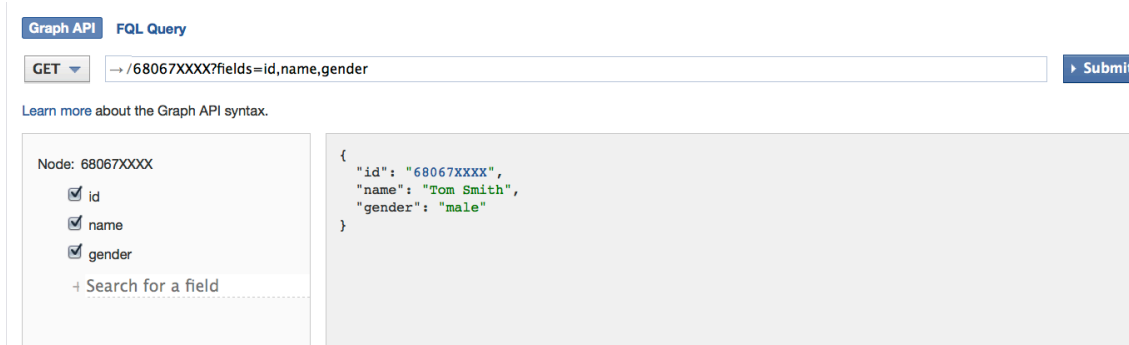

Figure 4. Example Query using Facebook's Graph API Explorer Tool

If the pronoun 'he' or 'she' is stored for a user, male or female is returned respectively. If the

pronoun 'them' is stored, the user's name and ID are returned but no information is given about

the user's gender, as if the user has no gender at all.

Figure 5. Example Query with 'She' Pronoun Selected

Figure 6. Example Query with 'Them' Pronoun Selected

Through these queries, it became clear that the database has been programmed to store gender

for each user based on their pronoun. It is relatively easy for Facebook's software to identify a

user's pronoun. Legacy users – including those who hacked their gender – remain, able to retain

a neutral pronoun and an undefined gender on their profile without selecting a 'custom' or binary

gender. Once again, a legacy user (hacked or otherwise) who selects a gender configuration in

this new software iteration loses their legacy status and can no longer retrieve it since the

loophole has been patched. Overall, it is clear that a binary logic has been used to reassign all

users as male, female, or undefined – which is, in fact, exactly the way that gender has been

coded since the original 2004 iteration of Facebook's software. For instance, a user who selects

'gender questioning' and the pronoun 'she,' based on the new affordances of the February 2014

iteration, will be coded as 'female' in the database despite having selected 'gender questioning'

and a query via the API will identify the user by the 'female' label.

This analysis reveals that at the deep level of the database Facebook's coding of gender has

remained constant since 2004.[8] While users have been given 58 new ways to identify and

represent their gender, the underlying code forces them back into a binary logic. Once again,

despite this deep structuration of the software through the binary, non-binary possibilities persist:

a zero value was always possible yet is now more directly accessible to users when they select a

neutral 'them' pronoun.

Finally, the broader function and purpose of the Graph API Explorer tool is also relevant.

APIs enable interoperability between software like Facebook and external websites and services.

The finding that no significant change to the coding of gender in the database has occurred over

the past ten years is indicative of this relationship. As Facebook Project Manager Lexi Ross

notes:

> 'Most of our third-party apps of course do not support custom gender and we wanted
>
> to really make it a frictionless experience for those developers. … Basically it was
>
> sort of a decision for simplicity sake to not break other parts of the product.'
>
> (interview, 27 February 2014)

If a wide variety of external sites are retrieving information from Facebook's database, a fundamental change to the storage of gender could cause widespread malfunctions. It would be remiss to imagine that advertising has no influence in these decisions. While not the focus of this article, economic logic may operate in other ways as well: for instance, how much time and energy ought to be devoted to deep changes to the system.

Discussion and conclusion

Despite the addition of 58 gender options in February 2014, the gender binary has not been deprogrammed from Facebook's software. The software-user relationship continues to be deeply structured by the gender binary at the same time that it is productive of non-binary possibilities. It is the simultaneous existence and absence of the binary, on one hand, and movement towards but failure to fully capture a fluid spectrum, on the other, that positions Facebook's software somewhere in-between the borders of the antagonism analyzed here. Within this liminal space, and at a deep level, Facebook's code has functioned to normalize the gender binary and regulate the social life of users even though the capacity to move beyond the binary has always been a programmatic possibility.

This ten-year analysis reveals that gender became increasingly valuable to the system over time. Beginning with the absence of gender on the sign-up page, optional gender ID on profiles, and a database field type that accepted three values, the trajectory of Facebook's

development moved towards a critical set of changes in 2008. These changes enforced

mandatory binary gender ID upon sign-up and restricted access to non-binary (undefined)

genders on profiles and in the database to just one subset of users: legacy users. This

interventionist design strategically pursued users without a binary gender ID. Grounded in a

binary logic, users were reconfigured away from the non-binary programmatic possibilities that

have always been materialized in the code. At this juncture, the software only permitted users to

deviate from the binary if they fulfilled the following conditions: joined prior to this 2008

intervention, had not selected male or female on their profile page at the moment of intervention,

and had noticed – and clicked – the 'close' button when prompted to select a binary pronoun.

Eventually, some users discovered a loophole that allowed them to hack into the database and

bypass the software's restrictions to reconfigure their accounts as non-binary. By February 2014

the pendulum appeared to swing back towards the spectrum. The loophole was patched and 58

gender options and three pronouns were added to the user interface. The tier system was

dismantled, allowing equal access to the range of programmatic possibilities. Deep in the

database, however, gendered pronouns became the sole determinant of a user's gender. Each user

account is associated with a record in the database that contains gendered data based on one of

the three originally programmed categories (male, female, and undefined) regardless of which of

the 60 options (58 plus male/female) the user selected via the user interface. The software

(invisibly) assigns a pronoun for users with a binary gender ID. Users with a 'custom' gender

actively select their own pronoun, yet database implications of their selection are invisible and

unexpected, deeply structured by the gender binary.

The antagonism between competing constructions of gender as a rigid binary and a fluid

spectrum plays out in and through the software-user relationship that is tied to design choices,

coding practices, the significance of gender as a variable and a field for data collection, and the myriad ways in which users both accept and challenge Facebook's software. Analyzing a decade long software-user relationship, as it pivots around gender coding, offers an opportunity to consider these entanglements of power. While designers of social media software may have the greatest capacity to exercise power over the production of gendered subjectivities in and through their coding of gender, Feenberg argues that '[s]ubordinate groups may challenge the technical code with impacts on design as technologies evolve' (2005: 47). The gender hack is the most extensive challenge to the code. While it was users who discovered the loophole and made the hack more visible by sharing their technical expertise with other users, the opportunity was contingent on the non-boolean database field type for gender.

Returning to the framework of critical theory, there is a broader aim towards disrupting structures of domination and oppression in an effort to work towards a 'free' society (Fuchs, 2011). This eagerness to disrupt comes from an understanding of society that consciously works to imagine alternative potentialities – how society could and should be, not what society is at present (actuality). For Butler (2004: 13), exposing and analyzing constructions of 'the human' is a vital exercise:

> 'the human is not captured once and for all. That the category is crafted in time, and
> that it works through excluding a wide range of minorities means that its
> rearticulation will begin precisely at the point where the excluded speak to and from
> such a category.'

Such a poststructuralist analysis appears to beg for a release from the category. With this in mind, what are the possibilities for recoding gender in social media software?

Alternative coding possibilities include optional gender fields, non-existent fields (e.g.

Tumblr and Twitter), a 'gender spectrum slider bar' (Dopp 2010a) and an 'open-ended tagging

field that suggests words as you type.' With the latter option users can 'either loop in to what

others are saying … or create [their] own words and add them to the lexicon' (Dopp, 2010a). To

move towards fluidity one might also consider the programmed limits on a user's capacity to

move in and out of different gender identities, rigid uses of pronouns, and specific issues

surrounding privacy, such as which segments of a user's network can see selected genders and

pronouns and whether more than one gendered identity could operate. Perhaps it is unsurprising

that a non-profit, open-source social media site like Diaspora began with a typical binary coding

of gender and, within a year of its launch, replaced it with a non-mandatory text field:

Figure 7. Developer Sarah Mei's Change to Make Diaspora's Gender Field Text-Based

The developer who made this change did not want social media to 'alienate anyone … before

they finish signing up,' and was generally interested in 'start[ing] a conversation' (Mei, 2010). In

comparison to the increased granularity of Facebook's 58 options, a potential benefit of the text-

field approach is that it is not as vulnerable to the 'invisible' effects of politicized data collection discussed earlier.

How might alternative gender coding practices ignite self-critique and reflection, be generative of productive ideological work, spark discussions and offer educational opportunities? Answers to these questions are far beyond the scope of this article, and indeed any potentiality embedded in social media software represents merely *one* of many locations in society where similar questions could be considered. Also beyond the analysis offered here is the ways in which users construct gendered subjectivities outside of the binary in ways that are not tied to profile fields.

Overall, analyses focusing on the materiality of antagonistic constructions of gender in social media software offer important opportunities for nuanced and dialectic insights into the 'invisibly visible,' shallow/deep capacities for the production and enactment of power in and through software-user relationships and the regulation of social life through code. Findings are inevitably influenced by whether analyses of social media software focus on the user interface alone, the underlying database, some measure of both, or a combination of other software processes and actors linked to the software. More research that critically examines coding practices – coupled with similar practices beyond programming – and the difficulty of deprogramming the gender binary in both society and software is needed.

Notes

1 Throughout this article I use 'gender' as an umbrella term to refer to a user's sex (sexual organs, most often represented as male, female and intersex) and/or a user's gender (feelings and expressions associated with gender identity). My use of 'gender' is incomplete in many ways, unable to capture the complex realities of people's lived experiences and the ways in which biology, culture, and politics influence our understanding of both sex and gender in ways that can be difficult to untangle. Over the past decade Facebook has faced critique over the use of 'sex' and 'gender' as interchangeable terms.

2 These options became available for any user who had English (US) selected as their language or altered their selection in order to access the new options.

3 The social construction of gender as a fluid spectrum can be crudely understood as a continuum between masculinity and femininity, including every shade of masculine-femininity and feminine-masculinity, along with genders that exist closer to the center (such as genderqueer) and even gender questioning identities. The spectrum can also be representative of possibilities for gender expression and identity that have yet to be fully imagined or embodied.

4 By 2008 the 'status' field (which had already been modified at least once to allow non-students to join) had been removed.

5 This age requirement existed in Facebook's Terms of Use since at least 2005, but it was not until the 2007 iteration of the sign-up page that 'birthday' was included as a mandatory field to address the issue.

6 As I finish writing this article yet another related story is breaking. Facebook's real name policy has been implemented in various ways over the years but most recently it has involved deactivation of user accounts, requests for legal names and, in some cases, insistence on photographic ID as evidence (such as a driver's license) to reactivate accounts. Drag queens are at the center of current media attention, along with queer folks. While safety is cited as a concern by Facebook spokespeople, the queer community and drag queen community have argued that safety involves the ability to identify oneself in ways that may differ from 'legal' identities (Sylvan, 2014).

7 The broader turn towards algorithmic culture as an object of study for a wide range of disciplines beyond computer science is an exciting direction, especially as it relates to this article in the context of interrogating normative logics (see, for instance, Sandvig et al., 2013).

8 With the February 2014 iteration the value 6 became operational (equating to custom), yet the values of 0 and 6 become collapsed when querying the database, with neither returning a gender.

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