Patching Gender: Non-binary Utopias in HCI

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ABSTRACT

Non-binary people are rarely considered by technologies or technologists, and often subsumed under binary trans experiences on the rare occasions when we are discussed. In this paper we share our own experiences and explore potential alternatives - utopias, impossible places, as our lived experience of technologies' obsessive gender binarism seems near-insurmountable. Our suggestions on how to patch these gender bugs appear trivial while at the same time revealing seemingly insurmountable barriers. We illustrate the casual violence technologies present to non-binary people, as well as the on-going marginalisations we experience as HCI researchers. We write this paper primarily as an expression of self-empowerment that can function as a first step towards raising awareness towards the complexities at stake.

Definitions

- **Transgender (trans)**: Someone whose gender is incongruent with that assigned at birth.
- **Cisgender (cis)**: Someone whose gender is congruent with that assigned at birth.
- **Non-Binary**: Someone whose gender falls outside the "male/female" binary defined in Western society.
- **Utopia**: A fictional, perfected situation. Literally: *no place*.

[1]We note, for example, that this paper cannot be classified any more precisely than "gender" because the CCS only thinks men and women are relevant categories.

On pronouns

Any pronoun can be a non-binary pronoun. Pronouns are potentially an expression of gender, but do not have to be.

[2]predominantly as white, thin, androgynous and trans-masculine

On Bug Reports

This paper uses the metaphor of "gender bugs" to illustrate how what is often considered a feature in technological design comprises harmful bugs for non-binary populations. We chose purple lines to indicate parts we consider should be removed from our experiences and replaced with the utopian ones marked as yellow. The overall colour scheme of the paper (yellow = inclusions, white = background, purple = deletions, black = text) follows the colours of the non-binary pride flag.

CCS CONCEPTS

• **Social and professional topics** → **Gender**;

KEYWORDS

Utopia, Non-Binary, Gender, Bugfixes

INTRODUCTION

In the last few years, HCI has worked to emphasise the situated and contextual impact of technological design [9]. A nascent area of work explores the impact technologies have on trans lives. Research in this area historically excluded the consideration of non-binary trans people[12].[1] While this has improved over time (e.g., [18]), works still frequently perpetuate a particularly "transnormative" view of trans lives: a reduction of trans experiences down to those of binary trans people [11].

On those few occasions when non-binary existences are centred, they are assumed as universal[2] and discussion tends to be reductive: as a matter of an additional checkbox on forms [6, 10]. This resonates uncomfortably with wider discussions around queer identities, particularly the work of Spade and other scholars in highlighting how such "inclusion" can often amount to nothing more than complicity in the very gendered hierarchy that twists our existences [4, 19].

As non-binary researchers and practitioners, this state of affairs is deeply frustrating to us. Our needs, desires and expectations are complex and plural. We reject both HCI's frequent silence on our existences and the field's tendency to presume our experiences as homogeneous and universal.

In this work, we explore examples of how technological design frequently excludes non-binary people, as well as those who do not "pass" as a binary gender, and their needs, in a format technologists should be able to relate to, namely "bug reports". This non-exhaustive list of issues covers difficulties we face in participating as researchers, and infrastructural violence encountered when interacting with the technological systems HCI produces.

We not only critique the status quo, but also aim at finding solutions, some of which (we expect) resonate with the experiences of binary-gendered people. From our perspective, these solutions seem to be so far removed from our own everyday struggles that they appear almost unattainable, utopian. We document our own and solicited personal experiences as a matter of establishing community and self-affirmation which might also function as a first step towards illustrating the complexity involved in going beyond gender binarism.

Berenstain, "Epistemic Exploitation"
"Epistemic exploitation occurs when privileged persons compel marginalized persons to educate them about the nature of their oppression. [...] The coercive and exploitative aspects of the phenomenon are exemplified by the unpaid nature of the educational labor and its associated opportunity costs, the double bind that marginalized persons must navigate when faced with the demand to educate, and the need for additional labor created by the default skepticism of the privileged." [2].

Bivens & Haimson, "Baking Gender Into Social Media Design"
"Recently, tech industry professionals in charge of computational predictions for ad targeting, purchasing behaviors, and the like have shifted away from demographic-based recommendations and toward recommendations based on behavior...this is a promising development, in that it points to a potential future where gender classification would no longer determine what a person would see on a site...yet other data merely take the place of gender—acts of cultural consumption, in this case —which may be similarly layered with judgments about users rooted in binary and heteronormative performances" [3]

BUG REPORTS

Bug 1: Conference Attendees Report Epistemic Exploitation

```
    Joey visits a conference, excited to present work from the last
    year and discuss it with colleagues they do not often see.
-   They are shocked by the keynote, where the speaker claims that
-   non-binary people are not a relevant demographic and is overall
-   dismissive of anything that is not heterosexual, cis and white.
-   After that keynote, 90% of the conversations people have with Joey
-   consist of asking questions about non-binary existences, seeking
-   help and information to understand the debate. Instead of
-   presenting the work that they are excited and enthusiastic about,
-   Joey spends the conference educating strangers.
+   They have the chance to present and have others engage
+   meaningfully with their work. Joey feels right in their element.
    After an exhausting week, they need to take time off to recover
    from the stress, but look forward to the next conference.
```

Bug 2: Please, *Mis*gendering is my Mother

```
    Sam orders cat food. Ze navigates the different menus with ease,
    well-familiar with the task: dry food, wet food, some treats,
    and a toy. On checkout, ze types in hir billing
    and delivery addresses and clicks to finish hir order.
-   An alert window pops up: there is a mandatory "title" field.
-   All titles offered are binarily gendered. Sam begrudgingly
-   picks one, wondering how gender matters to cat food.
    One of the cats wanders over, rubs their head on Sam's leg,
    and purrs.
```

Keyes, "The Misgendering Machines"
"to be trans—to be of a gender that runs contrariwise to that which society assumed of you—means to stand as testament to the idea that it is self-knowledge, not external assignation, that has primacy in defining gender. Put simply, a trans-inclusive system for non-consensually defining someone's gender is a contradiction in terms" [13].

Hamidi et al., "Gender Recognition or Gender Reductionism?: The Social Implications of Embedded Gender Recognition Systems'
One of the most prominent themes arising in interviews was that AGR incorporates flawed representations of gender that are consequential. Notably, gender is not something that can be accurately read through physical features (face, body, or voice) by either humans or digital algorithms [8].

Bug 3: Cistem Errors

```
    Visiting researchers bring an ASUS Zenbo robot to Subbu's lab.
-   One feature the robot has is guessing the age and binary gender
-   of nearby people. The researchers offer to demonstrate this to the lab.
-   Subbu squirms as the robot genders people, while coworkers laugh
-   uproariously on the occasions the robot gets it wrong. Subbu quietly
-   leaves the meeting. Their thoughts spiral, alternating between the
-   damage this could do to trans people, the effective erasure involved
-   in it, and their missed opportunity to communicate this to other
-   researchers and avoid putting other people in the same situation Subbu
-   found themselves in.
+   After the demonstration, everyone exchanges productive ideas for future
+   development that are mindful of people who might be interacting with
+   the robot.
    Once they get home, Subbu can rewind a little,
-   recovering from how on guard they were all day in case anyone
-   brought up the incident or demanded that they explain why they left
-   the meeting,
    by playing some video games.
```

Bug 4: Liar, liar, gender on fire

```
-   Gray finds out that the European Union is funding facial recognition
-   technology that will function as lie detectors on EU borders.
-   As Gray has to cross a border in and out of the EU every day, she
-   is worried about the implications of gender recognition in this
-   software, and how that may complicate the chances of changing her
-   legal gender marker to non-binary in the future.
-   Gray criticises this development not only because automated gender
-   recognition and lie detection are unattainable, but also because the
-   product can be used to target the most vulnerable populations.
```

Ahmed, "Living a Feminist Life"
"When you expose a problem you pose a problem. It might then be assumed that the problem would go away if you would just stop talking about or if you went away." [1]

Goldberg *et al*., "Navigating identity development and community belonging when 'there are only two boxes to check'"
"[P]articipants spoke to weighing the tradeoffs of speaking up versus staying silent. Expressing their gender authentically meant potentially being hypervisible and vulnerable, which posed challenges to their well-being... speaking up meant that they could face negative reactions from others, possibly risking their safety in some contexts." [7]

Bug 5: No trust me, I Run A Business

```
    Kei is an interaction designer working on a digital product for xir
    employer. User and stakeholder research informs xir decisionmaking,
    and so most of xir decisions are respected.
-   The exception, xe finds, is the software's gender field: xir
-   employer considers it non-negotiable, and refuses to consider
-   including any option outside the binary. Kei is troubled both as a
-   person and as a designer, since xe is being pressured to create
-   work that will leave a portion of end-users alienated, including Kei.
-   At the same time, xe feels unable to refuse, as xe would risk
-   getting fired and losing xir primary source of income.
+   Kei explains to xir employer that, given a user's gender has no
+   effect on their interest in the product, and a restrictive gender
+   field would result in a difficult experience for trans users, the
+   field should be removed. The employer agrees. Kei is able to create
+   a successful and inclusive product - one xe is more than
+   happy to use.
```

Bug 6: Front-end Erasure

```
    To register for exams,
-   Brin has to input eir gender into eir university's software
-   systems. Ey are only presented with binary options, making em
-   anxiously procrastinate registration. Ey are eventually put on the
-   spot by an exam coordinator, who Brin is then forced to out eirself
-   to. The coordinator finds out that they could put an "x" down in the
-   database, but only manually and from within the administration.
+   ey sign up with their student identification number.
```

Passmore *et al.*, "Priviledge of Immersion"
This is not a unique situation. Most games with avatar creation are heavily gendered, sexist and erase non-binary identities. The suggestion here is to freely change different styles, but really, sometimes it can be as easy as just offering one version for everyone that already is ambiguous and open for interpretation and then just change hair colour and pronouns for that single avatar. Hence, non-binary identities are somewhat excluded from the "privilege of immersion" [17].

Epstein *et al.*, "Examining Menstrual Tracking"
"Gendered or heteronormative designs of [menstrual tracking] tools exclude people from using them and alienate others who continue to use them." [5]

Bug 7: Too little to play with

```
    Alex, as so many others are, is excited by the launch of Pokemon Go!
    They download the app, enthusiastic to reminisce about their
    childhood and play a Pokemon trainer.
-   On the character creation screen, they find the options are to create
-   either a male or female character - and the character must be very
-   thin and tall, following western perspectives on beauty. The only
-   actual choice Alex has is in selecting their character's hair colour.
-   Body proportions, hair length, facial features or other aesthetic
-   elements are not selectable. They begrudgingly make a choice, wincing
-   internally every time they open the application.
+   Alex gives their character a square, slightly plum stature and
+   designs a face with makeup and a beard.
    They are able to collect several Pokemon before their phone battery
    dies from the power-intensive app.
```

Bug 8: Exclusion and Embodiment

```
    Khyati is excited to see a new "feminist" app for bodily
    exploration and menstrual care presented at CHI.
-   When he goes to the talk, he is surprised and hurt to see a
-   product reeking of binary biological essentialism.
-   The researchers present menstruation as a phenomenon exclusive to
-   (and universal to) women - ditto the presence of a vagina. Khyati
-   catches the eye of a trans friend across the room and see her close
-   to tears at the implication she is not a "real" woman.
    After the talk they explore the apps for menstrual tracking available
    on the Apple Store.
-   They find that each one is assuming a very specific lens of gender and
-   embodiment, referring to womanhood and making assumptions about
-   menstruating bodies.
```

Mogul-Adlin, "Unanticipated"

"Many participants experienced health care settings as adhering to a rigid male/female binary, and discussed feeling invisible, even if they had not had explicitly negative experiences...though better, LGBT clinics are not perfect. Several patients reported that they still did not feel that their nonbinary identities were understood at LGBT clinics, and that providers assumed that they were binary trans, or that they were a queer cis person. This was especially apparent in transition care." [16]

Bug 9: All what?

```
    Isaac begins to socially transition and is excited to finally begin
    to live as the person they knows themselv to be. Their first
    actions (after sending an email to their workplace!) are to update
    software systems (email accounts, medical interfaces, school systems)
    to use their new name.

-   Six months later, this change still has not stuck. While their
-   doctor's patient software contains their new name, the text messages
-   and emails that it sends do not: the software developers inform Isaac
-   that it is tied to legal name, and refuse to change it. Attempts to
-   access even basic, general medical care are stymied by this.

-   After they go in to access hormone treatment, their doctor marks their
-   patient record as "transgender woman", explaining that this is the only
-   option the insurance systems will accept. This causes further
-   complications in future appointments, where they have to explain their
-   gender to every new person, each of whom is actively
-   misinformed for accessing things as simple as strep
-   throat treatment.
-   Eventually they just stay silent.
    The treatment they need, they gets.
-   The treatment they can avoid, they don't get.
+   Layers of infrastructure are designed in an ecologically-aware way,
+   allowing for seamless communication of the new name up and down
+   the stack of systems.
```

Commentary to Bug 10

We are intentionally not citing the paper here; this snippet is not intended to serve as a 'call-out' to researchers with whom we have since collaborated. Instead, the purpose is to illustrate why non-binary perspectives have to be included in research about us to make it relevant and appropriate to our existences. When researchers design technical systems in a fashion that actively excludes the discussed community from consideration, we call that poor design. It is thus confusing why the HCI community raises no such red flags when researchers make proposals about non-binary people without including us.

Bug 10: Paved with Good Intentions

```
    One of Sasha's activities during their Masters' degree was asking
    colleagues and collaborators to justify asking participants
    questions about gender: why ask? Do they need to? Why not use
    a free-text field?

    During their PhD a few years later, Sasha runs into a researcher who
    explains that they have just completed a large-scale study examining
    how gender should be asked about, using a free-text field, and are
    about to publish a paper making recommendations. They are even
    collaborating with an expert on trans issues in HCI!

    Sasha was excited for the paper and recommended colleagues and
    students refer to it even before publication. When they were
    finally able to read it,
-   Sasha was shocked and startled; the paper proposes researchers ask
-   about gender by posing the question: "Are you...?" with three options:
-   "man," "woman," "something else: specify [text box]".

-   Sasha contacts the authors, patiently explains why this is
-   inappropriate and invites them to participate in a follow-up piece
-   that more unpacks the complexities and multiple issues involved in
-   asking about gender. Still, the damage is done; the follow-up piece
-   will be in a less prestigious venue, and they have already encountered
-   professors in their department who - citing this paper! - reject
-   any efforts Sasha makes to encourage a more nuanced approach to
-   gender-inclusive research.
+   they were fascinated by the care the paper took in how gender
+   concepts differ across a range of communities, and the lesson
+   that questions into gender should be mindful of gender's contextual
+   basis and minority groups within spaces of study.
```

DISCUSSION

Through stylised slice-of-life reports, we have described *some* of the issues that non-binary people encounter in interacting with HCI systems and spaces. All of them are based on situations that an author or another non-binary person has encountered. All of them also show how technological design interweaves with societal constraints non-binary people face and often exacerbates them. Even in cases where individuals are able to react to a given situation contextually and appropriately, technological systems perpetuate a status quo that reinforces the point of view of privileged majorities without reflecting on the consequences for marginalised people.

These issues are ubiquitous; a constant background noise of exclusion and ill-consideration that sometimes accelerates into denial of service or access. They interlock with similar or identical concerns by other, overlapping populations. Issues of normalised forms of embodiment have implications for non-binary people, but they also have implications for cis and binary trans people, and interlock with the concerns of disabled people and/or people of colour, since bodily standards and expectations that are premised on conventional white, western aesthetic standards have long been linked to racist [15], ableist [14] and body-shaming [20] outcomes. The same is true of artificial, infrastructural gatekeeping around medical care (Bugs 6 & 9), and general issues with inclusion in the HCI community—It is no coincidence that critical race studies, disability studies and other fields examining different forms of embodied marginalisation have narratives which resonate so strongly with these ones. We have an obligation to work on these issues and do better, in how we design and in how we interact.

What we cannot do is simplify it or say that non-binary inclusion is just an additional checkbox, or even that a one-size-fits all solution exists for a population whose very *existence* denies the idea of simple fixes or classifications. There is no easy, single answer here, but that the work is hard is not a reason to avoid it [21]. As designers and researchers, we must begin building systems that minimise assumptions and enable openness as well as self-determination that offer the potential for *plurality*, not a false dichotomy between assimilation and eternal Otherness. Design work has the opportunity to disrupt and counteract presumptions and toxic structures that marginalise people within society instead of simply reproducing them. It might well take that opportunity as a responsibility.

CONCLUSION

We have presented a series of bug reports along with utopian patches, highlighting some of the regular and irregular issues non-binary people face in interacting with technological systems and spaces, and how they are intertwined with societal constraints. We do so to exhort our community to do better, and to put in the effort in *doing* better. Rather than take the easy way out when it comes to inclusion, we must embrace the complexity and plurality of existence. Only then will this fictional utopia—a utopia of conditions others take for boring and granted—turn into our everyday reality as well.

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Commentary

For alt.chi paper
Patching Gender: non-binary Utopias in HCI

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The authors provide the original metaphor of 'bug fixes' to address pervasive gender issues in technology and technology-adjacent spaces. More concretely, they highlight technologies' systematic failure to acknowledge non-binary gender options. The authors convincingly illustrate this problem by delivering a 'bug report'; a list of ten individual cases in which technology misrepresents non-binary people in specific ways.

The authors make explicit their own implication in these cases, as some are drawn from their personal experience. This transparency adds credibility to the contribution. As the authors note, it is written for the sake of personal empowerment. I would add that in its execution, the paper is also highly suited to empower others: The authors not only rightly use the *alt.chi* platform to 'vent' about their experiences, but utilize it to spark a wider, much-needed debate. Reading the 'bug report' inspires self-reflection and challenges the reader to think about scenarios in which they might have been offended by 'buggy' technologies.

Perhaps due to its personal-political perspective, this paper succeeds at using the difficult rhetorical form of academic humor. The term 'gender bug' makes visible a serious problem by playfully connecting the domains of programming and gender activism. The main conceit of the 'gender bug' is that its flaws have been constructed through social 'programming' and can be 'fixed' through critical rebellion against the 'cistem'. For technologists, bug reports should be high on the list of 'man-made' (my pun) mistakes to be undone in order to make the programs of our lives run more smoothly. This case is stated in a clear and unapologetic way, including non-binary and binary-identifying users in its rationale.

While the 'gender bug report' gives a solid overview of what problems persist, the discussion could have gone more into depth with what these problems mean on a broader societal scale. Much space of the article is filled up with the list of single-case examples illustrating problems, leaving less space for analysis later. I recommend to unpack the bug-list in terms of 'common errors', staying consistent with the programming analogy. For example, newbie programmers often miss semicolons; what would those semicolons be in the domain of gender errors?

When it comes to the theme of 'patching', the title promises some solutions which the article does not offer. This, as the authors concede, is due to the 'utopian' nature of patches (solutions seem too far from current reality). However, what the authors could have done is to work out a preliminary set of 'hacks' to get started on the patching process. Even under the condition that patches cannot be universal or durable, concrete examples would help ground the argument nevertheless. This is especially relevant for the proposed public panel format, in which a list of recommended 'bug fixes' might help keep the discussion playful and politically relevant. As experience experts on non-binarism, the authors could invite the audience to help develop 'quick and dirty' prototyping ideas and turn their Q&A into a QA session, in which the quality of suggested patches is assessed by the panelists.