

# Intersectional observations of the Human Brain Project's approach to sex and gender

B. Tyr Fothergill, William Knight, Bernd Carsten Stahl and  
Inga Ulicane

*Centre for Computing and Social Responsibility, De Montfort University,  
Leicester, UK*

## Abstract

**Purpose** – This paper aims to critically assess approaches to sex and gender in the Human Brain Project (HBP) as a large information and communication technology (ICT) project case study using intersectionality.

**Design/methodology/approach** – The strategy of the HBP is contextualised within the wider context of the representation of women in ICT, and critically reflected upon from an intersectional standpoint.

**Findings** – The policy underpinning the approach deployed by the HBP in response to these issues parallels Horizon 2020 wording and emphasises economic outcomes, productivity and value, which aligns with other “equality” initiatives influenced by neoliberalised versions of feminism.

**Research limitations/implications** – Limitations include focussing on a single case study, the authors being funded as part of the Ethics and Society Subproject of the HBP, and the limited temporal period under consideration.

**Social implications** – The frameworks underpinning the HBP approach to sex and gender issues present risks with regard to the further entrenchment of present disparities in the ICT sector, may fail to acknowledge systemic inequalities and biases and ignore the importance of intersectionality. Shortcomings of the approach employed by the HBP up to March, 2018 included aspects of each of these risks, and replicated problematic understandings of sex, gender and diversity.

**Originality/value** – This paper is the first to use an intersectional approach to issues of sex and gender in the context of large-scale ICT research. Its value lies in raising awareness, opening a discursive space and presenting opportunities to consider and reflect upon potential, contextualised intersectional solutions to such issues.

**Keywords** Gender, ICT, Intersectionality, Sex, Human brain project, Transnational business feminism

**Paper type** Research paper

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## Introduction

The Human Brain Project (HBP) is an enormous research endeavour with immense transformative potential within information and communication technology (ICT), neuroscience and related fields. It was funded in 2013 as a Future and Emerging Technologies Flagship to increase understanding of the brain from diverse intellectual perspectives and develop technical and ethical governance infrastructure for the advancement of neuroscience.

Like many ICT projects, women are underrepresented in the HBP. The proportionate lack of women in the HBP and similar initiatives is an ethical issue, not only because consideration for sex and gender throughout the process of research is vital to producing high-quality science (Nielsen *et al.*, 2017 for a recent review), and because multiple perspectives are important in producing socially relevant research, but also for reasons of fairness and social justice (Monroe *et al.*, 2014; Salinas and Bagni, 2017). The need to create truly diverse teams in ICT is immediate. Some emergent technologies are already ethically problematic, as demonstrated by the misclassification of Black women, transgender people and non-binary people by automatic gender recognition (Buolamwini and Gebru, 2018; Keyes, 2018). Engineering novel techniques and technologies for the betterment of society is central to the HBP mission, which makes representation at every level a particularly important consideration; thus, actions on these issues should not be taken for purely instrumental reasons.

The underrepresentation of women in the HBP has been acknowledged as a serious challenge within the leadership of the Project, who have progressively implemented an approach to the issue. However, the methods by which representation of women is achieved are worth reflecting upon, because some tactics may backfire and reinforce negative trends (Roberts, 2015). This could mean a significant loss of investment and a failure to increase diverse representation, thus robbing the project not only of prospective talent, but of public trust and potential social relevance. In this paper, we critically assess how approaches to sex and gender in large technical ICT projects are realised by using the HBP as a case study. We will contextualise the strategy of the HBP within the wider context of the representation of women in ICT, and reflect upon this approach from an intersectional standpoint.

Our intention with this work is to offer insights on the HBP strategy which may be helpful for both the HBP and future ICT projects; contribute to wider discussions on multiple inequalities and intersectionality within an EU policy framework; and raise awareness of the risks of focussing on only one axis of inequality in attempting to increase “diversity” in technical ICT projects.

## Definitions and Sources

We follow Johnson *et al.* (2009) in our definitions of sex and gender because these were designed for biomedical research and incorporate theoretical aspects derived from the humanities and social sciences:

*Sex* is a multidimensional *biological construct* that encompasses anatomy, physiology, genes, and hormones, which together affect how we are labelled and treated in the world. Although conceptualizing sex usually relies on the female/male binary, in reality, individuals’ sex characteristics exist on a fluid and medically or socially constructed continuum. (Johnson *et al.*, 2009, p. 3) [emphasis ours]

Although sex is primarily biologically constituted, it is not independent of social construction nor is it binary. When explicit, we use the term “female” to mean a person identifying as a member of the female biological sex, and the term “male” to mean a person

identifying as a member of the male biological sex. In the observations described here, we have mainly perceived gender or descriptions thereof

*Gender* is a multidimensional *social construct* that is culturally based and historically specific, and thus constantly changing. Gender refers to the socially prescribed and experienced dimensions of “femaleness” or “maleness” in a society, and is manifested at many levels. The experience of gender is always linked to the social and political context. (Johnson *et al.*, 2009, p. 4) [emphasis ours]

Gender is not universally understood in the same way and is not static; for example, consider the complexity inherent in geographical regions such as Europe (Verloo, 2007). Like sex, gender is also not binary and is deeply performative (Butler, 2006). We use the terms “she/woman” and “he/man” to describe these genders only when they are explicit. If not, we use “one” or the singular “they”. Sex and gender are not interchangeable, and the intrinsic linkage of both to wider cultural contexts underlines the importance and potential value of an intersectional approach.

Intersectionality was defined by Shields (2008) as “the mutually constitutive relations among social identities” (p. 301), and Walby *et al.* (2012) state that “inequalities mutually shape each other [. . .] at their point of intersection” (p. 237). Both definitions serve our purpose here, and we agree that every person concomitantly possesses multiple identities and aspects which shape their experiences (particularly their experiences of oppression), and that these cannot simply be individually disentangled from the others. Identities, categories of social membership such as ability, class, gender reassignment, age, religion, race or ethnicity, sexuality, etc. are not easily separable, and to treat any single aspect in isolation is to contribute to inequality and oppression. The example *par excellence* is provided by Kimberlé Crenshaw (1991): “the intersection of racism and sexism factors into Black women’s lives in ways that cannot be captured wholly by looking at the race or gender dimensions” (p. 1244). In that context, both discourses of anti-racism or feminism marginalise Black women because they privilege the views of Black men or White women respectively (see also Collins, 2008).

These definitions inform our discussion of representation in ICT, the HBP’s approach to “Gender and Diversity” through to March, 2018, and our reflections on how this strategy relates to other policies and developments. We will contextualise the HBP’s situation within ICT more broadly, and discuss observations of the available materials and events relating to the HBP’s approach.

### Methodology

We have written this paper from the perspective of researchers within the HBP. There are benefits and challenges of writing a pseudo-auto-ethnographical account of a project within which one is embedded. Usefully, we have been able to access the Project Blue Book (high-level personnel directory), an HBP conference on gender, a related workshop, internal circulars and advertisements and PowerPoint slides as members of the HBP. Phenomenological aspects of these events and items have heavily influenced this paper, and we have personal knowledge of circumstances (e.g. knowing approximately how many people work in the HBP; advice that the Gender partner was changing). However, our critique is tempered by an awareness of our positions within the project, and made in full knowledge of the importance of avoiding alienation of our colleagues and collaborators.

We intended to examine the HBP Gender Survey, sent to the entirety of the Project in Spring of 2017 and the HBP Gender Action Plan (GAP), to conduct a comparative analysis of baseline data with the data on underrepresented groups reported elsewhere (Napier

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Diversity Report, <https://epsrc.ukri.org/newsevents/pubs/napierdiversityreport/>). At the time of writing, that version of the GAP was not available within the HBP, and we were not provided with the survey or its methodology. Thus, aspects of the HBP strategy discussed here are based upon first-hand experiences and observations of the presentations used at the Gender and Diversity Conference (9 March, 2018) as well as the Career-Building Workshop (8 March, 2018) and related discussions with speakers and participants at both events. We incorporate observations of textual materials relating to these events and “gender”-related HBP Open Calls. Additionally, we consulted policy documents relating to the Horizon 2020 research framework.

### Representation in ICT

At this time, women are largely underrepresented within ICT education and practice in North America and Europe (Nedomova and Doucek, 2015; Pechteliadis *et al.*, 2015; Sax *et al.*, 2017; though see Varma and Kapur (2015) for India as a contrasting example and Wakunuma (2007) for the case of Zambia). A litany of books and articles from the previous decade traces the problematic experiences of women in computing education and related disciplines (Fisher and Margolis, 2002; Henwood, 2000; Papastergiou, 2008; Cheryan *et al.*, 2009; Misa, 2010). This mirrors issues of representation in academic leadership (Monroe *et al.*, 2014), particularly in Science, Technology, Engineering and Mathematics (STEM) disciplines, and supports the case for considering representation in computing independently (Sax *et al.*, 2017).

Initiatives intended to increase the proportion of “women and underrepresented minorities” in STEM and ICT are viewed as a multi-purpose solution to issues of specialist labour shortage, a way of fuelling innovation or as a method of shaping a more diverse, representative future (Roberts *et al.*, 2002; Lagesen, 2007; Henwood, 2000; Bosch, 2015; Rodriguez and Lehman, 2017). There are many complex cultural, systemic and infrastructural factors contributing to the underrepresentation of women in these areas, including the early age at which activities may be gendered and the pervasiveness of negative attitudes toward women in certain professions (Pearce, 2017). This has resulted in many interpretations of the core nature of the problem and multiple framings of women. In many of these cases, women are presented as a homogenous group posing a problem to solve (Henwood, 2000), the answer to problems of “equality” (Monroe *et al.*, 2014; Salinas and Bagni, 2017) or as a way of improving research and innovation (Nielsen *et al.*, 2017).

Published articles suggest strategies to improve the inclusion of women, ranging from ways to achieve “gender equity/equality” at scientific events and conferences (Débarre *et al.*, 2018; Moghaddam and Gur, 2016), to lists of policies or actions to implement (Monroe *et al.*, 2014) to picking apart the many contributing factors when women select (or exclude) ICT degrees or professions (Sax *et al.*, 2017), to simply concluding that since the numbers of women in ICT roles are rising overall, that the problem will fix itself (Nedomova and Doucek, 2015).

However, a diverse, representative workforce with the capacity to produce the desired trends in innovation cannot be achieved by simply “hiring women”, implementing “family-friendly” policies (Monroe *et al.*, 2014) or even addressing issues of stereotyping, identity dissonance and individual belonging (Henwood, 2000; Bosch, 2015; Pechteliadis *et al.*, 2015; Rodriguez and Lehman, 2017). People hold multiple categories of social membership (identities) concomitantly (Museus and Griffin, 2011), and these mutually shape each other and contingent social relations (Walby *et al.*, 2012). Therefore, attempts to achieve “diversity” solely through “gender” are problematic because there is no such thing as “a woman”: one’s identity is multivariate and fluctuates. To focus questions about inclusion on

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a single variable (in this case, sex or gender, though these are frequently conflated) can exclude groups of people, especially when other aspects such as class or “race/ethnicity” are taken to be neutral or default categories (e.g. “whiteness” following [Carbado, 2013](#)). Efforts to increase the number of women in academia, STEM or ICT tend to focus on “women”, are often not intersectional and can thus serve to further marginalise those who are not in positions of privilege to begin with (e.g. women and non-binary people who are not White, able, middle class, cis-gendered, etc.).

Intersectional methodologies are incorporated into research design and analysis ([Windsong, 2018](#)), and [Rodriguez and Lehman \(2017\)](#) advocate for an intersectional agenda in ICT, drawing on decades of feminist and critical race theory research. Kimberlé Crenshaw’s seminal text detailed how the experiences of being a Black woman are not simply a combination of experiencing being Black (with the idea of “man” as default) and experiencing being a woman (with the idea of “White” as default; [Crenshaw, 1991](#)). Black women and Black LGBTQ academics in computing experience an intensely inhospitable environment ([Payton et al., 2018](#)). [Harris and Daniels \(2017\)](#) note the hostility experienced by Black lesbians in the tech industry, and [Gray \(2012\)](#) describes the oppression of Black and Latinx sexual minorities in digitally mediated spaces. Religion also affects whether women consider a career in ICT ([Trauth et al., 2008](#)). Individual complexes of identities result in distinct experiences ([Crenshaw, 1991](#); [McCall, 2005](#); [Shields, 2008](#); [Bryant, 2017](#)), and univariate approaches to “gender equality” are thus unlikely to achieve their intended impact apart from in highly specific circumstances (e.g.: [Monroe et al. \(2004\)](#) describe success in appointing women at elite US colleges established in the 19th century to educate the sisters of wealthy White men (p. 420-421)).

These calls for attention to intersectionality are not European, and thus less influential upon the HBP context. Furthermore, the role of women in ICT has received less scholarly attention in Europe recently (though see [Walby et al., 2012](#); [Pechtelidis et al., 2015](#)). In a European context, “multiple inequalities” or “multiple discrimination” is the dominant frame within which identity intersections are addressed ([Krizsan, 2012](#); [Agustín and Siim, 2014](#)). This is inadequate because it does not allow for compound or intersectional discrimination, precisely the phenomenon described by intersectional feminists and critical race theorists for decades. “Multiple inequalities” acknowledges that a single individual might be discriminated against in different situations for different reasons. However, different types of inequality are not structurally parallel or similar to one another ([Verloo, 2006](#); [Lombardo and Verloo, 2009](#)); categories of identity do not have the same weight or influence in any situation; the model is narrow and excludes other approaches to inequality; and it omits the concept of class entirely ([Kantola and Nousiainen, 2009](#)).

Class or socioeconomic background is a significant factor in accessing career paths leading to a position in ICT or academia. Class and labour are considered in Marxist scholarship and feminist theorisations of gender in ICT ([Fuchs, 2010, 2019](#); [Adam et al., 2004](#)). However, most approaches to diversity in ICT research (including intersectional works) lack deep engagement with class. The EPSRC Napier Report on Diversity mentions class in only a single instance, obliquely. This is concerning, particularly in light of the failure of the “multiple inequalities” framework to accommodate socioeconomic status and the innate, culturally contingent complexities in defining class.

There is another significant challenge to pursuing an intersectional agenda in European ICT (and therefore the HBP): Despite their prominence and centrality in intersectional scholarship, Black women have been “displaced from feminist dialogues about intersectionality in Europe” ([Cho et al., 2013](#), p. 799). This is linked to current European attitudes toward the analytical utility of “race” or “ethnicity”, perceived as useful only in the

USA and the United Kingdom (Cho *et al.*, 2013; Lewis, 2013), which amounts to “an act of epistemological and social erasure—erasure both of contemporary realities of intersectional subjects [. . .] [. . .] and the history of racial categories [. . .] [. . .] across the whole of Europe” (Lewis, 2013, p. 887). Race and ethnicity, like gender and sex, are cultural constructs, and they play a major role in the exclusion of groups and individuals from participation (Rodriguez and Lehman, 2017).

### Representation in the HBP

The HBP has an entire Subproject dedicated to Ethics and Society, which promotes the principles of Responsible Research and Innovation (RRI) within the HBP. Gender is an important part of RRI within the Horizon 2020 framework and is one of five thematic constitutive elements. Other approaches to RRI explicitly frame “diversity” as vital to truly responsible innovation: “Responsible innovation should not just welcome diversity; it should nurture it” (Stilgoe *et al.*, 2013, p. 1573). Although the nature and utility of “diversity” is debated, there is agreement that it is not limited to sex or gender, with other categories of social membership more frequently associated with the term (Baker *et al.*, 2016).

Beyond the overall under-representation of women in the HBP, they are most visible in managerial posts, and take on additional administrative roles. This is typical, and such trends benefit men’s research careers (Angervall *et al.*, 2015). Of the 16 SP Managers in the SGA1 funding period HBP Blue Book, 11 were women. In comparison, there were 23 women listed as non-managerial leaders in the project Blue Book and 141 men. At that time, 7 of the 19 Ethics Rapporteurs were women and four of these were also SP Managers. HBP Subproject webpages present a similar narrative: of the research Subprojects, only SP12, Ethics and Society, had equal representation of men and women at the time of writing.

Policies to address gender in the HBP were designed to align with Horizon 2020 policy. Presented as “Gender Equality”, and outlined on the EC website:

In Horizon 2020 Gender is a cross-cutting issue and is mainstreamed in each of the different parts of the Work Programme, ensuring a more integrated approach to research and innovation. (<http://ec.europa.eu/programmes/horizon2020/en/h2020-section/promoting-gender-equality-research-and-innovation>)

A series of objectives, including: “gender balance in research teams”; “gender balance in decision-making” (with at least “40 per cent of the underrepresented sex” in panels and groups, 50 per cent in advisory groups); and “integrating the gender dimension in research and innovation”, are listed on the website and in the guidance ([http://eige.europa.eu/sites/default/files/h2020-hi-guide-gender\\_en.pdf](http://eige.europa.eu/sites/default/files/h2020-hi-guide-gender_en.pdf)).

According to the website, achieving these objectives will:

- reach a critical mass of universities and research institutions in Europe which implement long-term institutional change through gender equality plans;
- increase the participation of women in research, improve their careers and achieve gender balance in decision making; and
- increase the scientific quality and societal relevance of produced knowledge, technologies and innovations by integrating an in-depth understanding of both genders’ needs, behaviours and attitudes. It also contributes to the production of goods and services better suited to potential markets.

The *H2020* objectives appear to be aimed at increasing “diversity”, but this is only true if “diversity” consists of women already occupying intersectionally privileged positions (able, middle class, etc.). Furthermore, gender is presented as binary (“both genders”) and

conflated with sex (“40 per cent of the underrepresented sex”). In the guidance document, this is only clarified with a brief reference to Londa Schiebinger’s work on sex and gender in innovation (Schiebinger, 2014). Race, ethnicity, disability and accessibility, class, religion, sexuality, age, gender reassignment (a protected characteristic in the UK) and related axes of oppression which clearly intersect with sex and gender do not merit mention.

The HBP has acted on these Gender Equality goals. An initial approach to addressing the underrepresentation of women and the issue of diversity in the HBP from January of 2017 (in the SGAI funding period) included creating a Gender Advisory Committee and coordinating “gender equality activities” with support from consultants at EAF Berlin (Europäische Akademie für Frauen in Politik und Wirtschaft Berlin), a non-profit organisation dedicated to “diversity in leadership”. An HBP-wide Gender Survey was conducted from May to June of 2017, followed by the production of a Gender Action Plan in March of 2018, including targets and key performance indicators. The survey results and the Gender Action Plan were presented in a summary format in the Gender Equality and Diversity Conference.

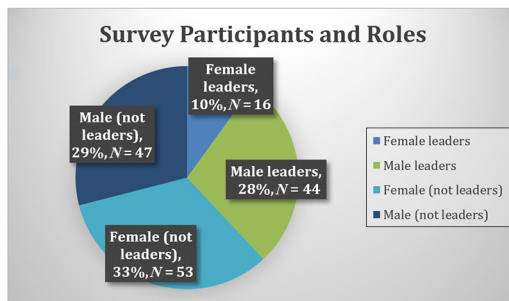
*HBP gender and diversity conference and gender action plan*

The primary purposes of the HBP Gender and Diversity Conference were to present the results of the Gender Survey and introduce the Gender Action Plan (GAP). Despite widely disseminated encouragement from prominent HBP leaders for “men” or “males” to attend, the vast majority of attendees were women. The survey results presentation led directly into the Gender Action Plan outline, and both indicated inequities and imbalances in the HBP leadership and project itself. Despite the inclusion of the word “diversity” in the conference title, this concept was not a core constituent element.

Unfortunately, a lack of contextual, qualitative, and numerical data has prevented an in-depth analysis; it was not possible to subject the survey itself to textual analysis as we were not given access to it. We therefore review and respond to the material presented at the conference in a summary fashion below. The terms “female” and “woman” were used interchangeably (likewise “men” and “male”, with other genders overlooked), and no acknowledgment of the difference between sex and gender was made; the terms used below follow these conventions. Likewise, the charts below are adapted from (and thus reflect) the terminology used in the survey presentation.

The survey was completed by 160 HBP members, who were broadly classed by leadership role (Figure 1).

Considering the underrepresentation of women in the HBP, the disproportionately high number of women taking the survey is notable.



**Figure 1.**  
HBP gender survey participants and leadership status

At the time of the survey, women occupied only 15 per cent of HBP leadership roles, and were more likely than men to think they were not equally represented in decision-making positions in the HBP. In fact, nearly half of men not in leadership positions in the HBP (Figure 2) thought women were represented equally in this regard, which represents a considerable gap in understanding.

Females who responded to the survey, especially those in leadership, were far more likely to live in a dual-career couple than males (Figure 3). This contributes to different working experiences and a potential gap in life quality between males and females.

More female leaders were in favour of measurable gender targets than male leaders. Non-leader members were either not asked this question, or their responses were not presented (Figure 4). This is problematic because that group is the largest in the HBP.

The following strategic plan was offered to tackle issue-related indicators: taking both a top-down and bottom-up approach; mainstreaming gender and diversity (“diversity” in this context appeared to amount to “more women/females”); promotion schemes for women, and making offers to women and men to encourage them to be



Figure 2. Survey participant views on representation in HBP leadership

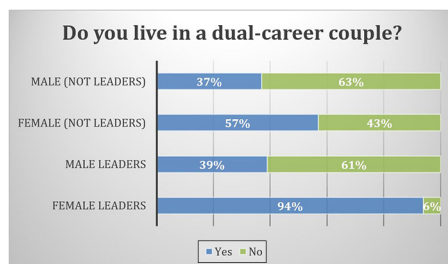


Figure 3. Dual-career couple status of gender survey participants

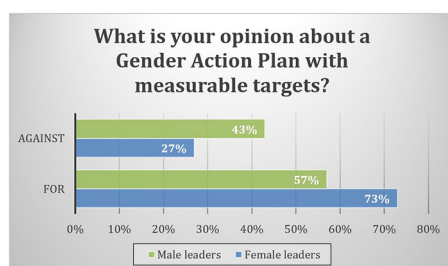


Figure 4. Survey participant views on a Gender Action Plan with targets



agents of change; suggested indicators and targets; and measures to be taken in four action fields.

According to the presentation, 42 per cent of attendees of HBP Education events were female, and 28 per cent of lecturers at events were female. The suggested goal was increasing the former by 2 per cent and the latter by 12 per cent. We understand that women were and not 42 per cent of the HBP, and that they were therefore already overrepresented in such contexts. To require attendance figures in excess of proportionate representation would only add to the labour performed by HBP women.

The second set of indicators required appointing an arbitrary number of women to positions of leadership, and increasing percentages of women in governing bodies. It also recommended that an arbitrary number of “gender” events be held. These are potentially valuable goals, but in the absence of contextual data (e.g. numbers of “males”, “females”, etc. and when these data were collected; how proportionally representative the statistics are; and methods to support implementation), they seemed unlikely to have much impact even without the incorporation of intersectional concerns.

Intended actions following from these indicators were intended to address “gender” in the HBP. These consisted of workshops for PhD students; career-building workshops for female scientists; production of a resource list on women in STEM; a fellowship programme; leadership training; a sponsorship (mentoring) programme for future leaders; more gender events; and offering childcare support at conferences.

These activities not only tacitly excluded other genders (apart from in the realm of leadership), and might therefore either be ignored or spark resistance to the programme, but they also excluded non-researchers. This was sometimes explicit (as outlined the workshop description below) and in keeping with a prevailing view that other labour is not as valuable as that of “scientists”. Implicitly framing childcare as a concern of “women/females” is also an issue, and assigning the responsibility for associated costs onto HBP partners “according to their rules and regulations” appeared particularly galling since it is unlikely that most member or partner institutions had policies governing this. Furthermore, these actions did not address the many structural causes for the perceived lack of “women”. Finally, these solutions were outlined from a perspective detached from the realities of “women/females” in the HBP. As far as we could assess, at no point were “female/women” PhD students and researchers asked what they would personally require to remain in the HBP or consider continuing a career in ICT or neuroscience.

The final recommendations to address “gender” in the HBP focussed on governance structures. These began with work–life balance policies and included items which would be practically impossible to enforce at the project level, such as meeting times and email conduct. Some recommendations (e.g. “supporting partner institutions, HBP leaders and individuals” were so vague that they were meaningless, whereas others extended extant structures (the Gender Advisory Committee). The plan also recommended that Open Calls be evaluated by panels with an unspecified percentage of women, and that new applications to collaborate with the HBP be subject to requirements of female–male ratios. Annual reporting with numerical data was then advised, without irony.

Finally, the presentation closed with a “Call to Action”, including the following directives:

- “Encourage diversity in your team!
- Consider women and men equally for promotion!
- Support colleagues with childcare responsibilities!
- Seek female and male speakers for your events!

- Invite female and male members for committees!
- Check your partner institution's rules and regulations!"

The items in the Call to Action above are inherently problematic, despite positive language and clear intentions to include “men/males”: diversity is not defined; gender is presented as binary; support is not clear in the context of childcare responsibilities and frames those with children as creating more work for those without children; blandly stating that females and males should be members of committees without reference is both self-evident and toothless; and the exultation to check your partner institution's rules and regulations in an attempt to encourage compliance with unknown policies appears asinine.

Other speakers at the conference presented more nuanced perspectives on gender in the HBP, especially Ineke Klinge (Chair of the Horizon 2020 Advisory Group on Gender) and Londa Schiebinger (head of Gendered Innovations, Stanford University). Schiebinger's paper focussed on how including aspects of sex and gender in scientific research improved research results (outlined by Nielsen *et al.*, 2017). She also made a clear statement about sex and gender not being interchangeable, and in conversation with one author of this paper, agreed that gender and sex were not the only aspects of identity important to consider with regard to increasing diverse representation in the HBP.

The predominating discourse of the conference advocated for prioritising gender or incorporating sex and gender for instrumental reasons: to produce “excellent science” and as a proven way of “adding value”. Representation went unmentioned. Social justice or ethical considerations, in the words of one speaker, were not sufficient motivators for change. Furthermore, there was a focus on showcasing “females” or “women” and a parallel deontological fixation on leaders/leadership, governance, rules and regulation in the HBP and EAF presentations. This reflected a lack of awareness of the situation of “females/women” in the project and a neglect of other genders, not to mention a general failure to consider power relationships and cultural change. Overall, a hierarchical and firmly research economy-driven view in which women were most productively transformed into a source of value pervaded.

#### *HBP gender and diversity workshop: Fixing the women*

The Gender and Diversity Career-Building Workshop was offered on the 8th of March 2018, a provisional step in transforming the “females/women” in the HBP. To take part, one had to fulfil several criteria: be “female” (rather than identify as a woman, etc.); be a post-doctoral or PhD researcher; invest time in the process of nomination within the appropriate Subproject; and write an application to take part. Additionally (to quote the advertisement):

“Candidates should:

- have a proven scientific record;
- be particularly ambitious;
- be motivated to pursue towards [sic] leadership positions in academia; and
- be working in the Human Brain Project (HBP).”

If one met these criteria, they would be offered personal skills training, information on scientific career building, career planning opportunities, a session on self-presentation and a “Networking Night in which they would be able to meet successful female scientists to give participants first-hand insights into the challenges that lie ahead of them”. One author of this paper applied to and attended the workshop; below, we outline this event and offer considerations for the future.

Unfortunately, one of the EAF organisers fell seriously ill, which prevented some aspects of the Career Building Workshop from going ahead. The event was facilitated in a lecture format, except for a partnered reflection activity designed to aid in career planning, a drawing activity intended to help the attendee focus on the areas of their life which they needed to “fix” and a guided self-presentation session.

The workshop began with a distinguished speaker from the Universidad Politécnica de Madrid. She presented a narrative which, whilst intended to be inspirational, may have undermined the intent behind the workshop. The speaker had three daughters and a very successful research career in data science, which she acknowledged was partly due to a supportive spouse and hiring a nanny. This information was received by some attendees with unease, perhaps due to the exceptional unlikeliness of access to the resources to do the same (also, some had children but not necessarily partners). She asserted that the first three years after one’s PhD were the most important, and that it may not be “worth it” if success during this period eluded a researcher. She unequivocally stated that the most important factor in research career success was mobility across countries. Her period of mobility was a 1.5-year post at an extremely prestigious US university, which came across awkwardly because most of the participants (the majority of whom were long past their PhD) had already moved countries several times and/or for a longer duration. This opening session demonstrated that the workshop aims had not been designed with the situation of precariously employed researchers or the current research context in mind.

Perennial challenges such as: “my parents are getting old and I want to live near them and still have a career”, or “I want to be able to live with my husband and still have a career” or “when can I have a child and still have a career?” were raised but not discussed, and the implications of structural oppression were avoided. Practical solutions or an opportunity to openly discuss these were not provided. Apart from the self-presentation training, attendees were treated as a homogenous, heteronormative group. Attendees were quietly expected to come from an educated, middle class background, want a (male) partner and children, be able, to have common learning and working experiences, etc. Workshop activities did not link to the Gender Action Plan presented the next day in any discernible way.

There are multiple considerations regarding the exclusion of groups and individuals from this workshop. In the context of multi-scalar power relations, it may be socially uncomfortable to request nomination for inclusion in such an event, let alone one offered only to members of a single gender identity. Considering the strategies consciously or unconsciously deployed to avoid social friction in ICT (Adam *et al.*, 2004; Alfrey and Twine, 2017), it may seem counterproductive to put one’s head above the parapet by singling out the gender aspect. Furthermore, it is well-documented that many women are uncomfortable with self-promotion, partly due to the perceived social consequences of this behaviour (Lindeman *et al.*, 2018). Therefore, viewing oneself as “particularly ambitious” could be seen as destructive; likewise, an unqualified statement like “have a proven scientific record” is unclear. What is proven? Does this only refer to publications, or can it mean datasets? Is a social scientist an acceptable applicant? Furthermore, requiring a desire for leadership from the candidate places another social burden on them and conflates leadership with success.

## Discussion

### *Transnational research feminism?*

The presentations, papers and discussion at the HBP Gender and Diversity Conference and sessions in the Career-Building Workshop were intended to bolster the participation of “women/females” in the HBP and related research pathways whilst highlighting the

importance of incorporating sex and gender into research. The reasoning behind these concerns is aligned with recent high-profile research (Nielsen *et al.*, 2017), and variously described as increasing scientific excellence, improving research quality, raising productivity, “saving lives and money” and adding value to the HBP. These are noble and useful goals, but important considerations could be lost in the process.

The focus of sex and gender initiatives in the HBP and in ICT research more broadly is to increase participation and capitalise on the abilities of “diverse” teams to produce higher quality research, making the most of an untapped talent pool and becoming or remaining competitive in specific fields (Herring, 2009, though see Stojmenovska *et al.*, 2017 for a critique). These aims replicate a conflation of sex and gender with “diversity” and unerringly echo strategies employed by corporate or state initiatives under the umbrella of Transnational Business Feminism and other forms of the neoliberalisation of feminism (Prügl and True, 2014; Roberts, 2015; Prügl, 2015). In other words, women in the supply (innovation, research, etc.) and/or marketing (publishing, patents, proposals, etc.) chains are offered conditional empowerment to produce advancements which benefit the overall system, and which may only serve to reinforce systemic oppression (Prügl, 2015). Whether or not this attempted mobilisation of women’s labour is in response to a perceived crisis in ICT innovation (see arguments outlined in Roberts, 2015, p. 215-216) is certainly up for debate. This approach to the role of women in innovation may be problematic for the following reasons:

- It ignores the nature of gender oppression within ICT and other disciplines, and makes diverse representation in the workforce merely incidental to research and innovation.
- It is unlikely to be successful for recruitment and outcomes because programmes adhere to an extant structure and operate within a wider system of oppression which does not respond to the interests or needs of women.
- In a European context, it does not acknowledge intersectionality apart from occasional confusion with “multiple inequalities” as operationalised within an anti-discrimination policy framework.
- Many who have and continue to benefit from the current systems are likely to possess various forms of privilege and therefore to maintain the status quo, thus indirectly contributing to systemic oppression.

Furthermore, this narrative is aligned with the Horizon 2020 gender strategy, which focusses on labour, employment and economic productivity, and in turn has been influenced by other European policy developments. The failure of “multiple inequalities” frameworks to consider aspects such as class, and the historic erasure of other groups from dialogue (in the words of one Gender and Diversity conference attendee: “We don’t have race in Europe”) is tantamount to total exclusion.

We do, in fact, have “race/ethnicity” in Europe, and this is not a recent phenomenon (Jones, 1997). To continue the historic erasure of culturally constructed categories of difference is to deny the experiences and identities of intersectional people (Lewis, 2013), and write them out of expectations for an innovative, inclusive, representative future. The same could be said of neglecting the effects of class. Rodriguez and Lehman make an explicit call for the incorporation of intersectionality, including addressing classism, to support the growth of computing sciences (2017), and projects like the HBP are ideally positioned to tackle this challenge.

*An intersectional future for the HBP?*

As this paper was in the final stages of completion, it became clear that the Gender Action Plan as introduced at the HBP Conference on Gender and Diversity would not materialise as planned due to a change in consulting partnership. The approach, events and materials discussed in the preceding sections were created by EAF Berlin, and the integration of the new partner, CONVELOP, has begun.

CONVELOP was selected following an Open Call, “Coordination of Gender Equality Activities”, and appears to be charting a different course for progress within the HBP on issues of sex, gender and diversity. At the time of writing, their strategy (as outlined in the proposal: “WE ARE HBP”) incorporates some considerations for which we advocate here, including an intersectional approach. The motivation for employing this approach appears to be partly to overcome resistance rather than an embrace of intersectional feminist theory (Rodriguez and Lehman, 2017) or as a commitment to “curating communities” (Pearce, 2017). Nonetheless, any acknowledgment of “multivariate” identities is promising, and we will follow the work of CONVELOP in the HBP with interest.

**Conclusion**

Despite the lack of access to the intended primary data sources, we have used first-hand observations of project documents and gender-related materials and events to demonstrate that the HBP approach to sex and gender up to March, 2018 is aligned with *H2020* policy, and that several shortcomings are evident, which resonate with the concerns of intersectionality and labour scholars:

- A failure to acknowledge class, “race/ethnicity” and other factors outside of *H2020* gender policy undermines attempts to recruit “women”.
- The resemblance to neoliberalised versions of feminism deployed to exploit women’s labour to the benefit of systems of oppression is uncanny.
- The focus on one gender may cause reticence to participate amongst women, and spur resistance amongst other genders.
- Targeting only “researchers”, “scientists” or “leaders” reinforces hierarchies and excludes many women from programmes.
- Likewise, a neglect of the areas in which women are overrepresented in the project leads to a narrowness of vision.

Whilst not intended to be comprehensive, the list below provides some ideas for developing related policy in large ICT projects:

- reflect upon the wording and vocabulary used when advertising funding, positions, etc.;
- include non-researchers in all aspects of work;
- include all genders in efforts to increase “diversity”, be clear that gender and sex are different and do not conflate gender with sexuality;
- fund childcare where children live;
- consider that individuals may have caring, household, or community duties apart from childcare, this may (a) incorporate intersectional positions such as income, age, religion, etc. and (b) be true of all genders;
- address education, project, meeting, and venue accessibility, take multiple religious calendars into account when scheduling meetings, and arrange social and networking events that are not centred around alcohol;

- make travel and hotel bookings through the project or institution so that reimbursement delays do not hinder applicants;
- when hiring, take breaks into account and recruit by career stage rather than the dates by which degrees or qualifications were obtained;
- arrange for long-term support of mentoring programmes and reward mentorship;
- make investments in educational ICT programmes for young children; and
- consider that high-quality research may not require researchers constantly moving institutions, and enhance support for international collaborations and consortia.

We have used an intersectional approach to open up the complex, culturally contingent space around gender and increasing diversity in ICT, but it is not clear what an intersectional HBP future would look like. Including sex, gender and other intersectional factors in scientific research increases research quality; more diverse representation in ICT is socially responsible and may stifle the perpetuation of intersectional marginalisation. But arbitrary requirements for an increase in “women” in the HBP are unlikely to have the impacts associated with diverse teams. Furthermore, would a truly intersectional HBP be 50 per cent “women”? Would the HBP serve as a representational microcosm of the population of the EU 28?

Any approach to diversity should be thoughtfully considered. The HBP has a unique opportunity to make a significant contribution to social good and equality within Europe and beyond, in addition to producing excellent science. Continuing, diachronic reflection on the impact of intersectional efforts in the HBP (and ICT more broadly) is a potentially productive line of future research.

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**Corresponding author**

B. Tyr Fothergill can be contacted at: [tyrfothergill@gmail.com](mailto:tyrfothergill@gmail.com)