GUEST EDITORIAL

Digital inequalities: contextualizing problems and solutions

This issue of *JICES* is devoted to an increasingly important social problem that has been called the digital divide, digital inequalities and digital inclusion. No matter the name, the social problem remains the same: individuals, groups and collectivities are disenfranchised from the benefits of digital technologies. We open this issue of *JICES* with an editorial commentary by Simon Rogerson who reminds us that digital divides are not sui generis but are part of larger inequalities. Rogerson pinpoints the crucial linkage between digital divides and larger social divides: "There have always been social divides predicated upon, for example, poverty, education, gender and status". At the same time, Rogerson reminds us of the importance of those fighting the good fight to create a more just and humane society for all, especially for ordinary people who are "digital outcasts". The terminology outcast is telling – as much for those suffering from it as for those responsible for it. Indeed, these individuals and groups have been cast out and cast aside by powerful actors, governmental and private, who are unwilling or unable to create digital inclusion for these ordinary people. These ordinary people are worthy of empathy and inclusion simply by virtue of their membership in the greatest collectivity: humanity. With this in mind, we have assembled scholars working to bring the excluded into the fold and problematize the social problem with an eye to solutions across several foci: emergent forms of inequality, health and disability, causes and consequences and finally solutions and responses.

We begin our examination with emergent forms of inequality with "Risking Identity: A Case Study of Jamaica's Short-lived National ID System" by Hopeton S. Dunn. Dunn walks us through how Jamaica was the first country to legislate the use of AI and modern data science to create a national database of the identities of all Jamaican citizens. In 2019, AI and biometric data were being used to reestablish a national identification system. The move was deemed unconstitutional by the Jamaican Supreme Court because of its violation of citizens' privacy, as well as Jamaica's Charter of Rights within its constitution. Significantly, Dunn warns that this case study offers insight into new forms of inequality created by the use of biometric data and faulty AI in tandem with inadequate privacy measures to protect sensitive personal data: "The highly intrusive level of biometric data being demanded, the compulsory nature of the plan, criminal sanctions for non-compliance and the absence of adequate technical or legislative safeguards for data protection". Dunn's work is an indicator of emergent forms of digital inequality that are complex and increasingly driven by institutions, governments and corporations, whose power is so great that it threatens the autonomy of individuals.

The next article also draws our attention to the new power dynamics animating the frontier of digital inequalities research: "Distributed Pool Mining and Digital Inequalities, From Cryptocurrency to Scientific Research" by Hanna Kreitem and Massimo Ragnedda. Exploring the new relationships between consumption and production, Kreitem and Ragnedda make the case that: "The advent of models that reward the use of computer power with value lowers the need for personal data collection vital in the attention economy models [. . .]. In this new revolutionary context, many features and aspects are changing, including the attention

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economy and participatory culture that not only enables participation through content, but also through computer power". Like Dunn's work, this article brings to light how the digital divide has moved far beyond issue of access and skills. In their words: "Distributed mining can partially overcome some barriers or limitations in accessing some services and content (first level of the digital divide), using (second level) and getting tangible benefits from the use of the Internet (third level). In this way, as we shall try to argue, distributed mining can help in reducing digital gaps". Their research shows us how users may allocate costs and pay these costs in varied ways such as attention given to advertisements or by allowing computer mining such that "users may convert their devices' computational power into value". Significantly, Kreitem and Ragnedda's work presents a model for fair revenue that shows how to bridge the digital divide in small but significant ways.

From emergent forms of inequality, we now turn to digital inequalities related to disability and health with "Digital Media, Disability and Development in the Anglophone Caribbean-Social and Ethical Considerations" by Floyd Morris. In this article, Morris contends that institutional support is needed to "consistently advocate for the implementation of the laws to empower" those with disabilities *vis-à-vis* all life realms including media and technology. This important pledge is in keeping with 2006 United Nations' Convention on the Rights of Persons with Disabilities and the UN's subsequent Sustainable Development Goals in 2015 with objectives for Member States to achieve by 2030. Targeting his analytical gaze on the Anglophone Caribbean, Morris reminds us that countries within the Caribbean Community have also devised the Kingston Accord (2004) and the Declaration of Petion Ville (2013). Nonetheless, as Morris skillfully substantiates, all of these governmental initiative are undercut without the participation and support of the wider public as this partnership is necessary to "confront myths and negative attitudes towards persons with disabilities" (PWD). All of us, including "individuals within Caribbean societies and by extension the Global South, especially those in digital and traditional media, must be cognizant of their social and ethical responsibilities and therefore adopt a more transformational approach towards persons with disabilities". Therefore Morris shows how all individuals – both PWD and the abled – must be fully included in society and take part in "the enlightened involvement of digital and traditional media, the execution of their social and ethical responsibilities" to contribute to "a reduction of digital inequalities that exist where persons with disabilities are concerned".

On another front, in "Technology and Accessibility in Global Governance and Human Rights: the Experience of Disability Rights Advocates" by Filippo Trevisan and Derrick Coqburn, we examine the work being done by another set of international organizations. Like Morris, they argue for the importance of voice, buy-in and empowerment of the "global disability community to be able to participate effectively in the decision-making processes". Importantly, they remind us that differently abled individuals have a stake in all matters of human well-being. In their words: "the full inclusion of people with disabilities in global governance requires their effective participation in any relevant processes, not just those that are specifically focused on disability issues". Further, "Although the formal designation of persons with disabilities as 'other stakeholders' has provided an important framework for their inclusion in all global governance processes, effective participation can only be achieved if the barriers that have historically prevented people with disabilities from engaging in political processes on an equal playing field are acknowledged and addressed appropriately". Therefore the authors offer a "baseline assessment of global governance and technology needs" generated by stakeholders including Disabled People's Organizations' leaders. Trevisan and Coqburn shed light on how ICTs have the potential to best provide greater inclusion and "basis for equitable development for people with disabilities" and call

our attention to the connections between disability, accessibility and participation that are best solved by "community-backed technological solutions to persisting barriers that systematically exclude people with disabilities from fundamental global governance processes".

On another front, we see the timely impact of digital inequalities on vulnerable populations in "The COVID-19 Pandemic: New Concerns and Connections between eHealth and Digital Inequalities" by Aneka Khilnani, Jeremy Schulz and Laura Robinson. Training their gaze on at-risk populations with urgent health needs, they argue that "Because the digitally disadvantaged are less likely to use eHealth services, they bear greater risks during the pandemic in order to meet ongoing medical care needs. This holds true for both medical conditions necessitating lifelong care and conditions of particularly urgency". The authors show the contrast between the digitally advantaged who use technologies to protect themselves from COVID-19 and the digitally disadvantaged whose lack of digital resources puts them at risk on several levels. On the one hand, "digital solutions are providing new way to provide medical care, services, and support to those most risk of contagion". Yet at the same time, during "the COVID-19 pandemic, the very populations that could benefit the most from eHealth are often digitally disadvantaged and unable to take advantage of the opportunities provided by eHealth advances". Khilnani, Schulz and Robinson show both how risks can be successfully managed by digital communications and eHealth advances but that those in most need of them are least likely to have access to them. In their words: "Not only are the digitally disadvantaged more likely to belong to populations experiencing greater risk – including age and economic class—but they are less likely to use eHealth services and thereby bear greater risks during the pandemic in order to meet ongoing medical care needs during the pandemic".

From disability and health, we turn to how digital inequalities and culture context come together in the "Digital Divide in light of Religion, Gender, and Women's Digital Participation" by Ruth Tsuria. In this article, Tsuria illuminates how "religious traditionalism might limit women's participation and increase the gendered digital divide" to understand how "cultural, and specifically religiously-informed, attitudes structure the way in which people use the internet, and in some cases, how these attitudes can hinder and limit their usage". In this way, Tsuria shows us the power of religious traditionalism that, in certain groups, may add a new gendered dimension to the digital divide. In the author's words, this exploration probes "questions of power, prosperity, and sexual freedom and safety". Findings offer insight into "how access to communication technologies needs to be accompanied with social and cultural flexibilities that allow for an ethical discussion of sexual identities and female sexuality". Here, we see fresh linkages between issues of digital inequalities with older inequalities of control of the body. Tsuria explores how religious individuals use the internet for religious discussions, as well as how "the internet can be used by religious individuals to debate and innovate their religious practice". The work offers important insight into how ICTs have the potential to better support traditionally underrepresented groups, a potential that may be "limited by the cultural and societal norms of the community".

Next, Farooq Mubarak, Reima Suomi Reima and Satu-Paivi Kantola contribute "Confirming the links between socio-economic variables and digitalization worldwide: the unsettled debate on digital divide". The authors provide a historical panorama of the imbalances in ICT access and usage that have marked the past two decades. Analyzing data from 191 countries, their results show the enduring impact of income and education on ICT diffusion. Establishing that this connection persists, they offer a more nuanced reading of the connection with education to ask: "Does education primarily drive ICT use in developing

and underdeveloped countries?" Indeed, they find that "income and education are positively related to ICT diffusion and confirm that poverty is a leading cause of the digital divide worldwide". Further they show that "the rate of GDP per capita is linked inextricably to the rate of ICT penetration" globally and therefore "growth in income and education determines the increasing ICT adoption rate". Findings regarding the income and ICTs "contribute additional evidence that the growth in income and education determines the increasing ICT adoption rate. Among the plausible explanations for this finding is that high purchasing power encourages investment [. . .] and [. . .] education and is increasingly being embedded with ICT-based learning".

Finally, we turn to solutions and responses in two papers beginning with "Broadband Adoption in Urban and Suburban California: Information Based Outreach Programs Ineffective at Closing the Digital Divide" by Lloyd Levine. The article analyzes data from pilot projects in California, to show how policy efforts have not been effective. As Levine points out, even in the most connected and technologically advanced countries, digital inequalities persist and negatively impact the well-being of significant segments of the population: "The challenges to closing the rural divide are different than the urban divide and necessitate infrastructure specific policy solutions". More specifically, in Levine's words: "the ethical decision to help low-income households with utilities and quasi-utilities has already been made. [. . .] While broadband is not yet a utility, evidence clearly shows it is a necessity". As Levine's article demonstrates, conceiving of broadband connection as public utility is a key to ensuring digital inclusion even in the epicenter of Silicon Valley, the city of San Jose. To make these connections, Levine's work "provides an understanding of the knowledge about and perception toward broadband in low-income households and assesses the effectiveness of various outreach efforts aimed increasing meaningful internet access in urban and suburban, low-income households". As Levine argues: "governments have a moral and ethical responsibility to prevent the disenfranchisement of low-income and rural residents due to lack of broadband" because those "lack meaningful internet access suffer educational and economic harms" that greatly diminish life chances.

Another path for solutions is provided by Martin Perez Comisso and Laura Hosman in "How do we understand 'meaningful use' of the internet? Of divides, skills and socio-technical awareness". The authors take a bird's eye view to "revisit the framing, evolution and transformation of the concepts of digital divide, digital literacy, and digital inclusion over the past three decades". Grounding their analysis in this longitudinal perspective, they propose the concept of "socio-technical awareness". By deploying the framework of sociotechnical awareness, Comisso and Hosman consider the degree to which "individuals and communities are able to achieve meaningful (or empowered) use of ICTs and the internet". Probing the concepts of digital divide, internet-ready skills and effective use, they "propose that: to achieve meaningful internet use, people need 1) access, 2) requisite skills development, 3) self- and technological- awareness, in order to be able to make informed decisions about internet use (including whether or not to even be connected)". The authors make the case that while access, skills and literacy are all necessary for "meaningful use", they must be joined by "socio-technical awareness," which is necessary to make "empowered decisions about ICT use" within "a systemic and integrative understanding" of "the dynamic patterns, contexts and environments that humans create".

In closing, we have seen that as digital inequalities proliferate and become more complex, so must our understanding of the contours of the solutions to them. At the time of writing, digital inequalities have never been more important. Solutions have never been more needed. As Simon Rogerson powerfully concludes, in the midst of the COVID-19 pandemic, digital inequalities have taken on new salience. Today, there are potential life-and-death

consequences of digital inequalities in light of the pandemic: "The recent COVID-19 pandemic is an extreme example of the acceleration of this divide and in this situation may well have indirectly resulted in fatality. This is because information empowers those who have it; but it also disenfranchises those who do not. During the pandemic, these digital outcasts, who are not informed in a timely manner, might put themselves in grave danger. Furthermore, with physical social networks destroyed the digital outcast suffers emotionally and mentally". Future work and scholars must examine these issues more closely as their salience grows with each new phase of the pandemic, each wave of new technologies and each opportunity for all of us to work for digital inclusion together.

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