

Editorial

# Critical Junctures in Assistive Technology and Disability Inclusion

Maria Kett <sup>1,\*</sup> , Catherine Holloway <sup>2,\*</sup>  and Victoria Austin <sup>3,4,\*</sup>

- <sup>1</sup> Humanitarianism and Disability, UCL Institute of Epidemiology and Healthcare, 1-19 Torrington Place, London WC1E 6BT, UK
  - <sup>2</sup> Interaction Design and Innovation, UCLIC, University College London, 66-72 Gower Street, London WC1E 6EA, UK
  - <sup>3</sup> GDI Hub Community Interest Company, London E15 2GW, UK
  - <sup>4</sup> Official WHO Collaborating Centre on Assistive Technology, University College London, 66-72 Gower Street, London WC1E 6EA, UK
- \* Correspondence: m.kett@ucl.ac.uk (M.K.); c.holloway@ucl.ac.uk (C.H.); victoria.austin@ucl.ac.uk (V.A.)

It is clear from the events of the last 18 months that while technology has a huge potential for transforming the way we live and work, the entire ecosystem—from manufacturing to the supply chain—is vulnerable to the vagaries of that ecosystem, as well as having the potential to exacerbate new and existing inequalities [1]. Nowhere has this been more apparent than in the lives of people with disabilities, who make up around 15% of the world's population and already face barriers to accessing education, employment, healthcare and other services [2]. Some of these barriers are a result of unequal access and opportunities. However, there is a growing movement to better understand how assistive technology systems and services can be designed to enable more robust and equitable access for all. As part of this growing movement, the Paralympic Games in Tokyo this autumn saw the launch of a new global campaign to transform the lives of the world's 1.2 bn persons with disabilities: the 'WeThe15' campaign reached more than 4.5 billion people through its marketing and stands ready to be the biggest of its kind in history. Next year, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), AT scale and GDI Hub will publish the first World Report on Access to Assistive Technology, which will include research from the £20 million, UK Aid funded, GDI Hub-led, programme, AT2030. Ahead of that, in this Special Issue, we focus on how some events and situations—as diverse as the coronavirus pandemic and the Paralympics—can act as 'critical junctures' that can enable a rethink of the status quo to facilitate and promote change. We focus on the medium of assistive technology as technology used by people with disabilities to bridge accessibility and inclusion gaps in mainstream digital and physical environments. Bringing together perspectives from a wide range of contexts, we present six new papers which reflect examples of critical junctures in disability inclusion or the opportunity to create such turning points in disability inclusion.

In the first paper, Giulia Oggero, Louise Puli, Emma Mari Smith and Chapal Khasnabis discuss how income status, gender and the type of assistive technologies available influence participation in, and the outcomes of, individuals and teams in the Paralympics. The world watched as two Afghan athletes made it to Tokyo against all odds to compete in the games [3]. They did not win any medals, but it could be argued that their presence alone highlighted the plight of all those persons with disabilities remaining in Afghanistan under unknown circumstances. Sport has the power to heal divides. As the authors argue, more international collaboration and cooperation is needed to ensure equitable access to assistive products, training facilities, and competitive events, all of which foster inclusion (Contribution 1).

The second paper, by Catherine Carty, Daniel Mont, Daniel Sebastian Restrepo and Juan Pablo Salazar, also focuses on how sport has the potential to change attitudes and fos-



**Citation:** Kett, M.; Holloway, C.; Austin, V. Critical Junctures in Assistive Technology and Disability Inclusion. *Sustainability* **2021**, *13*, 12744. <https://doi.org/10.3390/su132212744>

Received: 5 November 2021  
Accepted: 6 November 2021  
Published: 18 November 2021

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

ter inclusion—specifically, the launch of the ‘WeThe15’ campaign at the Tokyo Paralympics. The paper has four aims, crucially including the context within which the ‘WeThe15’ campaign was launched, in particular public perceptions of disability. The authors demonstrate how the campaign aims to leverage sport to advance the rights of people with disabilities in line with sustainable development objectives—including health and wellbeing, livelihoods and empowerment, as well as broader issues of infrastructure, attitudes and business engagement. They end with a call for para-athletes, along with mainstream media, to do more to facilitate this engagement (Contribution 2).

The third paper in this special issue, by Ben Oldfrey, Giulia Barbareschi, Priya Morjaria, Tamara Giltsoff, Jessica Massie, Mark Miodownik and Catherine Holloway, explores the impact of a different set of junctures—including the ongoing coronavirus pandemic and climate change—on the design, manufacture and distribution of assistive technology (AT). Through a series of examples, they show the potential for more sustainable circular models of production that would increase access and availability, whilst at the same time reducing the environmental impact (Contribution 3).

In their paper on the legacy of the London 2012 Paralympics, Victoria Austin, Kate Mattick and Cathy Holloway present a retrospective framing of the approach to disability inclusion taken in the London 2012 Paralympic Games to develop a 12-step model of inclusion. The most successful Paralympics in history and also the most accessible Olympic Games ever, this model demonstrates that it was community leadership gaining the backing of politicians and institutions that was the necessary factor in facilitating the paradigm shift that was experienced. Their research also finds that, while London was unique, the model is replicable, and it encourages its further use and adaptation (Contribution 4).

The next two papers focus on one of the key components of the 12-step model: resources. Both discuss specific AT interventions. Andres Larco, Jorge Carrillo, Nelson Chicaiza, Cesar Yanez and Sergio Luján-Mora present an app designed for children with dyslexia, tested in a rural area of Ecuador. The use of apps has proved particularly beneficial during the COVID-related school closures and on outcomes on children returning to school (Contribution 5). Finally, Xiaochen Zhang, Xiaoyu Yao, Lanxin Hui, Fuchuan Song and Fei Hu review the use of navigation aids for persons with visual impairment. The paper demonstrates the array of high- and low-tech devices available in the field, but as the authors note, there is no clear ‘best buy’ that takes into account affordability, usability, and sufficient functionality (Contribution 6).

Each of these papers shows how technology has the potential to disrupt, to change lives for the better. Building on what Austin et al. call the ‘cracks’ through which to make the change, we need to ensure that these opportunities—the potential to ‘build back better’ from these junctures—whether they are COVID, sporting events, or other points in time, are maximized. This must be done with the leadership of persons with disabilities themselves, backed by institutions, governments, donors and the private sector to deliver lasting change.

### List of Contributors

1. Oggero, G.; Puli, L.; Smith, E.M.; Khasnabis, C. Participation and Achievement in the Summer Paralympic Games: The Influence of Income, Sex, and Assistive Technology. *Sustainability* **2021**, *13*, 11758, <https://doi.org/10.3390/su132111758>.
2. Carty, C.; Mont, D.; Restrepo, D.S.; Salazar, J.P. WeThe15, Leveraging Sport to Advance Disability Rights and Sustainable Development. *Sustainability* **2021**, *13*, 11738, <https://doi.org/10.3390/su132111738>.
3. Oldfrey, B.; Barbareschi, G.; Morjaria, P.; Giltsoff, T.; Massie, J.; Miodownik, M.; Holloway, C. Could Assistive Technology Provision Models Help Pave the Way for More Environmentally Sustainable Models of Product Design, Manufacture and Service in a Post-COVID World? *Sustainability* **2021**, *13*, 10867, <https://doi.org/10.3390/su131910867>.
4. Austin, V.; Mattick, K.; Holloway, C. “This Is the Story of Community Leadership with Political Backing. (PM1)” Critical Junctures in Paralympic Legacy: Framing the

- London 2012 Disability Inclusion Model for New Global Challenges. *Sustainability* **2021**, *13*, 9253, <https://doi.org/10.3390/su13169253>.
5. Larco, A.; Carrillo, J.; Chicaiza, N.; Yanez, C.; Luján-Mora, S. Moving beyond Limitations: Designing the Helpdys App for Children with Dyslexia in Rural Areas. *Sustainability* **2021**, *13*, 7081, <https://doi.org/10.3390/su13137081>.
  6. Zhang X.; Yao, X.; Hui, L.; Song, F.; Hu, F. A Bibliometric Narrative Review on Modern Navigation Aids for People with Visual Impairment. *Sustainability* **2021**, *13*, 8795, <https://doi.org/10.3390/su13168795>.

**Author Contributions:** Conceptualization: M.K., C.H. and V.A.; Validation: M.K., C.H. and V.A.; writing—original draft preparation, M.K., C.H. and V.A.; writing—review and editing, M.K. All authors have read and agreed to the published version of the manuscript.

**Funding:** This article received no external funding.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Nguyen, M.H.; Hargittai, E.; Marler, W. Digital inequality in communication during a time of physical distancing: The case of COVID-19. *Comput. Hum. Behav.* **2021**, *120*, 106717. [[CrossRef](#)] [[PubMed](#)]
2. Armitage, R.; Nellums, L.B. The COVID-19 response must be disability inclusive. *Lancet* **2021**, *5*, e257. [[CrossRef](#)]
3. Reuters 2 September 2021 'Two Afghan Athletes Arrive in Tokyo for Paralympics'. Available online: <https://www.reuters.com/world/asia-pacific/two-afghan-athletes-arrive-tokyo-paralympics-2021-08-28/> (accessed on 1 November 2021).