Is the internet the game changer? Disabled people and digital work in China

ABSTRACT: The marginalisation of disabled people in paid employment has been a longstanding issue. This article examines whether the recent proliferation of information and communication technologies (ICTs) can change the employment challenges for disabled people. It focuses on China, where digitalisation has happened almost simultaneously with industrialisation, and where a special disability employment trajectory is developing. Based on an exploratory study of the economic activities of Chinese disabled people, the article presents three types of digital work, in which physical labour, social relations and ICTs-related knowledge are commodified. These types of work are in general loosely organised, self-managed and unprotected. They have both empowering and debilitating effects. The article thus argues that the personal use of the Internet is just an entry point to disability employment, and it will be more effective if combined with policy interventions and broader structural changes.

KEYWORDS: Disability employment; digital work; Internet use; *canji* (disability in China)

Introduction

The marginalisation of disabled people in paid employment has been a longstanding issue. Despite the commonly accepted rhetoric that disabled people have equal rights to work (*Convention on the Rights of Persons with Disabilities*, United Nations) and global legislative improvements, people with impairments are still significantly excluded from working life. Research has found that disabled people over the world are less likely to be employed than their non-disabled peers (WHO and World Bank 2011; Mizunoya and Mitra 2013). Those who find paid employment are often concentrated in menial, low-status, poorly paid jobs and have less chance for promotion (Burchardt 2000; Schur 2003). Such is the case in China. A disabled person in China is defined as '[one] has abnormalities or loss of a certain organ or function, psychologically or physiologically, or in anatomical structure and has lost wholly or in part the ability to perform an activity in the way considered normal' (*Law of the People's Republic of China on the Protection of Persons with Disabilities* 1991). This medicalised concept encompasses an estimated 85 million people, which accounts for nearly 6.4% of the Chinese population (China's Disabled Person's Federation [CDPF] 2010 CDPF). In 2017, only 9.42 million had a paid job, out of 35 million 'economically active' disabled people; this indicates a rough employment rate of 26.99% (CDPF 2017). A growing number of studies have illustrated the material, structural and socio-cultural barriers Chinese disabled people face in job seeking and working (Cai and Zhou 2008; Liao and Luo 2010). These are products of able-bodied ideologies, as well as of China's transformation towards marketisation and neoliberal ideologies (Qu 2020).

As demonstrated in the literature, employment exclusion has vital impacts on the livelihoods, identities and social inclusion of disabled people (Roulstone and Barnes 2005; Jones 2008). Research suggests that many economically inactive disabled people would prefer to be working (Stanley and Regan 2003). There have then been discussions on how to reduce barriers and enable disabled people to work. In the context of China, information and communications technologies (ICTs) have been proposed as a new solution. In 2015, China initiated the Guidance on promoting the development of Internet Plus (State Council 2015-40), which defines ICTs as a key driver of economic growth. Disabled people are encouraged to participate in this 'revolution' and to find new, flexible forms of employment (*Protocols of the Promotion of Disability Employment in the 13th Five-year period* 2016–48). A recent policy announced financial aids to disabled people to start online businesses (*Guidance on Supporting Disabled People Self-employment and Entrepreneurship*). Empowerment programmes have also been rolled out, such as training on setting up e-shops on Taobao, China's biggest shopping platform. A report shows that between August 2016 to May 2018, more than 174,000 disabled people created Taobao shops, which achieved sales of more than ¥29.8 billion in total (approximately £3.29 billion. Ali Public Welfare 2019). Such entrepreneurial activities have been found to have positive impacts on people's income and sense of value (Lin, Zhang, and Yang 2019).

Based on an exploratory study to examine disabled people's economic participation in digital China, this article discusses a variety of digital forms of employment that have become the main sources of income for the participants. It aims to contribute to a more comprehensive understanding of the relationship between (non-)employment and disability, by incorporating southern experience, which is an underrepresented

area in global disability studies (Hanass-Hancock and Mitra 2016). The article also responds to the call to locate classical employment issues in the context of changes heralded by the information age (Roy and Lewthwaite 2016). To start, the article reviews published studies on employment and disablement in northern, industrial, neoliberal societies. It then introduces the subject of disability employment in China and how this has changed throughout history. After that the article discusses the methods used in the study and introduces the three types of digital work that emerged from the analyses, namely online physical work, relation-based business, and ICTs-related knowledge work. For each type of work, the article gives examples and illustrates both their empowering and debilitating effects. The final section discusses the shared elements of digital work in contemporary China.

(Non-)employment and disablement

As summarised by Westoby and Shevellar (2019), research on the employment challenges for disabled people often locates the problem in one of three places: in demand, in supply, or in the broader system of production. The demand side emphasises the role of individual workability in finding employment (Lewis, Dobbs, and Biddle 2013). It has led to activation policies and programmes being initiated to attempt to move disabled people into the labour market, but these policies have been widely criticised for overlooking disabling aspects of the work environment (Barnes and Mercer 2005; Hyde 2000). From the supply side, extensive studies have addressed barriers disabled people experience when trying to access employment, such as environmental obstructions and social discrimination (Barnes and Mercer 2005; Oliver 1990; Roulstone 2012; Thornton 2005), as well as disabling practices in workplaces or the character of work that creates a sense of disablement (Holmqvist 2009; Lock et al. 2005). The scholarship has called for policy interventions and the championing of individual rights in order to reshape the politics of distribution (Soldatic 2018).

Some scholars relate the issue of employment exclusion to the wider capitalist or neoliberal production system. Early scholars (Finkelstein 1980; Stone 1981; Abberley 1987) relate the formation of the concept of disability to the process of industrialisation. They argue that factory-based labour organisation, characterised by strict timekeeping, abstract and disembodied job design and inflexible job descriptions, establishes able-bodied norms that impaired bodies cannot conform to (Gleeson 1999). People with impairment are thus devalued in the production process and rejected in capitalist social relations (Abberley 2002). This structural exclusion has deepened in the global turn to neoliberalism. Neoliberal capitalism legitimates a set of citizenship norms (Peck 2001) in which economic participation is defined as an individual responsibility, and it is held that there are ‘no rights without responsibilities’ (Fiske and Briskman 2007, 52). Disabled people in this context are more harnessed to work to be included in the system of rights and welfare provision. However, impaired bodies are seen as ‘slow’ or ‘unproductive’, which produces the stigma that disabled people are either unable or unwilling to participate (Parker Harris, Owen, and Gould 2012; Soldatic 2018). These analyses suggest a fundamental paradox for the employment and wellbeing of disabled people: on the one hand, employment and the ability to gain an income can be enabling and empowering; but on the other hand, the job market in the capitalist/neoliberal system can be debilitating. Scholars have thus moved beyond the classical capitalist production

system to seek alternative employment forms for disabled people. The forms discussed include cooperatives, social enterprise, self-employment, and unpaid work such as volunteerism and charity work (Hall and Wilton 2011; Parker Harris, Renko, and Caldwell 2014; Westoby and Shevellar 2019; Pagan 2009).

Over the past few decades there have been significant changes in the global political economy, such as technological developments and a rise of mobility in globalisation, which have arguably undermined the industrial work society (Bauman 1998; Beck 2000; Castells 2001). Scholars have started to locate disability employment in this new context. For example, Roulstone (2002) argues that disabled people face greater challenges in the era of globalised capitalism because it has produced disorganised working patterns and widespread uncertainty. Some empirical studies find that post-Fordist jobs, which have features like multi-tasking, inter-changeability and team working, are more disabling than traditional industrial work (Foster and Wass 2013; Randle and Hardy, 2017). However, less effort has been made to link disability employment with the rapidly proliferated ICTs. Published studies on ICTs and disability have mainly focused on digital divides, arguing that disabled people are excluded from digital life due to barriers like high cost, poor design of devices and software, and the lack of relevant knowledge and skills (Goggin and Newell 2003; Dobransky and Hargittai 2006; Vicente and Lopez 2010; Watling 2011; Jaeger 2010). A small number of studies have examined ICTs as a means to help disabled people to gain or retain work (Hedrick et al. 2006; Meshur and Ulusoy 2013; Roulstone 2016). More recently, there has been a rise of studies exploring how disabled people work in digital creative industries, such as media, live-streaming and gaming (Boellstorff 2019; Ellis 2016; Johnson 2019). Most of these forms of work are established in advanced societies. They suggest a feature of devaluing income and emphasising positive impacts on self-worth and value in online working.

To sum up, research on disability employment has focused predominantly on advanced northern societies, where capitalist/neoliberal production is the main form of work and there is a (relatively) developed welfare system. Work exclusion in these contexts is identified as a common phenomenon, a construct of the production system and a driving factor of disablement. The next section introduces the context of China, which has a different framework of work and a different disability employment trajectory.

Disability employment in China

Since the late 1980s, China has initiated a period of market-oriented reform, in which its socialist work system (*danwei*) that offers permanent jobs, unified wages and egalitarian welfare, is being replaced by a labour market characterised by free mobility, mutual agreement and high competition (Keister 2009). This has caused the diversification of employment forms and the transition to a workfare agenda, as well as a rise of unemployment issues (Cai and Wang 2010; Bian 2002). Also, as China is positioned at the bottom of the global value chain to supply original equipment and products, low-end, labour-intensive work continues to be a key part of the labour market (Chan and Pun 2010). In these contexts, the meaning of work has changed, from an arranged patriotic duty to a personal responsibility (Pierini, Pearson, and Wong 2001). Ideologies like developmentalism and social Darwinism have prompted strong ableism norms in work (Qu, 2020).

From this context, a special, yet changing, disability employment trajectory has emerged. China's orthodoxy about disabled people is that they are 'equal members of our social family' but also 'a particularly difficult group that needs extra care' (President Jinping Xi, http://www.xinhuanet.com/politics/xxjxs/2019-05/19/c_1124513261.htm). In addition to existing anti-discrimination rules, a legal system is being developed to entitle and protect disabled people's rights to work (Tang and Cao 2018). Meanwhile, a series of policies has been rolled out to promote disability employment. These can be divided into two sectors: the state and the market. In the state sector, welfare production has been arranged as an element of 'socialist production'. This can be traced back to state-owned workshops and factories in Maoist China, which provided jobs to the poor, disabled and unemployed. Since the reform, these work units have been transformed into welfare enterprises to allocate institutionalised jobs for vulnerable people, including people with impairments (Shang 2000). More recently, a social enterprise pattern has been proposed, which promises tax reduction for enterprises accommodating vulnerable people (Zhu and Yan 2019). In the market sector, a quota scheme has been introduced, which requires all public and private work units to employ disabled people at a certain quota (the percentage of disabled people among all employees). The figure is determined by local states but should be no less than 1.5% (*Regulation on the Employment of Persons with Disabilities* 2007). Employers who fail to do so will have to pay a fine, while those who employ 'more disabled people than required' are rewarded. To further motivate employers, the government arranges tax-reductions for employers according to how much they pay disabled employees (*Regulation on VAT Benefit for disability employment* 2016).

While these polices, especially the welfare production system, have been argued to have positive impacts on disability employment (e.g. Shang 2000), the past decades have witnessed their decline and a growing emphasis on market logics (Liao and Luo 2010). The quota scheme has proved ineffective as some employers sign fake contracts with disabled people or would rather pay the fine (newspaper, http://dy.163.com/v2/article/detail/D1MAVH0R0521BIN5.html). As in the global north, the exclusion of disabled people from work has been rationalised. The dominant narrative is to frame the issue as individual deficiency in skills, experience or workability. Disabled people are encouraged to have a '*sizi* (four self) spirit', consisting of 'self-respect, self-confidence, self-strength and self-reliance', to seek for work opportunities on their own. A very limited number who succeed in their career are publicised as 'models'. Policy interventions have mainly focused on career training. All these limit the effects of promoting disabled people's working life.

Can the exclusion be fixed in the digital era? As mentioned, ICTs in northern societies have shown both positive and negative impacts on disabled people and their employment. While the article does not doubt the existence of some of the downsides in China, like digital inequalities, it draws attention to two special features of the Chinese context. First is a late and rapid digitalisation. China was not fully connected to the Internet until 1994. By 2018, however, it had 854 million people using the Internet on a regular basis and for almost every conceivable purpose (China Internet Network Information Centre [CNNIC] 2019). This has produced an e-economy that contributed to nearly 34.8% of China's GDP growth in 2018 and over 19 million jobs, which accounts for 24.6% of whole employment (China Academy of Information and Communications Technology 2019). As digitalisation in China happened almost

simultaneously with industrialisation, it has created a mixture of 'new' digital work and traditional ICTs-related work, such as manufacturing, shipping and services (Qiu 2009a). The other element is relatively common usage. The CNNIC report (2019) shows that the majority of Chinese internet users do not have a high education or high income. The fact is confirmed by empirical studies demonstrating that due to cheap digital devices and high mobility, grassroots people like migrant workers, who are often assumed to have less capital, have access to the Internet (Qiu 2009b). Scholars define the digital divide in China as 'have-less', rather than 'have-not', as found in northern societies (Qiu 2009b). Some believe this creates a more inclusive work environment, where people of different backgrounds and all degree of capitals can participate equally (e.g. Ji and Lai 2016). Others, however, focus on the problems of digitally enabled production, such as the absence of formal contracts and protection (e.g. Zhu and Tang 2017).

While ICTs seems to promise an alternative economy in China, as in global academia, little attention has been paid to disabled people in the process. Evidence suggests that despite barriers to access, a significant number of Chinese disabled people now use the Internet regularly, for socialisation, interaction and the forming of communities (Guo, Bricout, and Huang 2005; Huang and Guo 2005). While getting a paid job is identified as a key theme in their internet use (Qu and Watson 2019), only a few studies have addressed digital work or entrepreneurship on the part of disabled people (Lin, Zhang, and Yang 2019; Liu, Ding, and Gu 2016). The relationship between work and disability in digital China remains a largely unexplored topic.

Research question and methods

As reviewed, while employment exclusion of disabled people in northern, capitalised societies has been thoroughly discussed, such exclusion in post-communist, digitalised, globalised China have not obtained adequate attention. This article attempts to start to fill the gaps by exploring how Chinese disabled people use the Internet as a source of income. To define the scope, the study looks at work conducted in cyberspace with the help of ICTs, particularly internet technologies. This includes even minor activities, provided that they produced some income. ICTs-related work that is completed in the offline world, such as the manufacturing and shipping of digital devices, is excluded from the discussion, as is cultural or voluntary work that brings no economic reward. The study employed the grounded theory approach to generate findings from data systematically gathered and analysed (Glaser and Strauss 1967). This methodology is 'particularly useful when little is known about the area' (Birks and Mills 2011, 169).

Since 2013, the author has been a member of two Chinese public e-forums, where disabled people share their everyday life and interact with other people. This long-term observation has furnished a general sense of how disabled people use the Internet and what they care about. The online materials, admittedly public and anonymous, have not been directly used, although they have contributed to the formation of research questions. The author then interviewed disabled internet users for a 'thick description' (Geertz 1973) of their economic activities. This included in-depth interviews with over 60 disabled people and organisations between 2015 and 2019. Besides the face-to-face interviews, the author kept in touch with the participants via the Internet and was introduced to talk to their 'digital worker' friends. Both formal interviews and informal talks were conducted online. Ethical

issues including privacy, content and confidentiality, were considered throughout the study. When joining the e-forums, the author published public posts to introduce herself as a scholar and explained her study in detail. The participants, no matter whether recruited by the author directly or introduced by their friends, recognised the author's identity and gave consent for their stories to be used for research. This article exposes no personal details: where informants are named these are pseudonyms; all quotations were originally in Chinese and translated by the author. The materials cannot be traced back to individual participants.

Digital work: physical labour, social relations and knowledge

In what follows the article presents three types of digital work that are popular among Chinese disabled people, which are entry-level, manual work in which physical labour is commodified; micro-size e-business in which social relations are commodified; and professional ICT work in which specific knowledge is commodified. Each type carries both benefits and risks.

Physical labour in digital spaces

In traditional economies, disabled people are likely to engage in entry-level, low-skilled, low-paid jobs (Burchardt 2000; Holmqvist 2009). The arrival of the information era seemed to announce an absolute reduction in the requirement of human labour (Roulstone 2016). However, as found in this study, manual work is still a significant or even the primary option for Chinese disabled people. This includes a variety of forms, such as the so-called 'water army' (posters get paid to publish certain content online), and tasks like transcription and data entry; all these involve the commodification of physical labour. This article presents a special form known as 'game mercenary' or 'power-leveller'.

There has been a huge growth of massive multiplayer online games (MMOG) in the past few decades. Successful games such as Warcraft and Minecraft attract millions of players around the world, who use avatars to undertake cyber activities and interact with others; in some cases, players even create their own languages and social norms (Corneliussen and Rettberg 2008). Scholars have noticed labour-intensive, exploitative work in this sphere, such as real money trade (RMT), where people collect virtual currency or objects and sell them for real money (Lee and Lin 2011). A similar but unexplored form of work is power levelling. This is where gamers hire third parties to take control of their accounts and level up on their behalf. Shuxiao, a young man with hearing impairments, explained this phenomenon:

> *My current job is playing [a MMOG], levelling up game accounts for rich players. You know, level-up is boring, you may need to kill thousands of monsters for one level. I take this job when they get bored. I have three computers, they are on days and nights, I control the character to kill, kill and kill. Sometimes I get good [virtual] items, that's extra money.*

This is physical work in a digital space. Game characters move, fight and complete assigned tasks to achieve a higher level – all completed by moving and clicking a mouse and/or typing on a keyboard. Shuxiao's hearing impairment does not affect his control of the character, which means he has 'workability' for this job and can earn money. That is, with the assistance of technologies and a 'virtual' body, people with

certain types of impairments can participate in physical activities. The work is process- or time-based, meaning workers have to invest a certain amount of time and labour to get payment. There are different ways to organise it: people can be recruited by other players directly by responding to their recruitment on game-related forums, or they can establish online shops to attract customers (see Picture 1 for a screenshot of one such shop). According to Shuxiao, most disabled users get fragmented, informal jobs via the first channel, because they have no time or experience of business management. While human capital in northern societies often consists of knowledge/education, health care, or work experience (Hanass-Hancock and Mitra 2016), the capital invested here is basic and repetitive physical labour.

Participants identified 'no entering barriers' as the primary benefit of power-levelling work, especially for those having no other capital. A person who named himself as 'Pigsy', which is the name of a fictional character famous for his 'silliness', shared his story. Having paraplegia and needing to stay in bed due to inaccessible environments, Pigsy had difficulties in sustaining even a basic living. He then took the advice of his friend to be a full-time power-leveller.

> *I was considering suicide when my mum passed away, because I can't take care of my kid but became her burden. She was a teenager. If I died, the government would take her to the welfare home, you know, at least feed her and pay for her education. But I could not bear to leave her, so I asked for help. We got donations from really good people, including a second-hand laptop, then I got this work. The income can at least cover rice, oil, vegetables … that's for me to be alive, and for my daughter to still have a family.*

Picture 1. This is a screenshot of an e-shop providing a power-leveling service, which includes information such as the price (10 Chinese yuan and free delivery), the sales record (10446 items in the last 30 days), and the customer ratings (4.9 out of 5).
http://2p.com/497385_1/Unveil-the-Secrets-of-Chinese-Power-Leveling-Studios.htm

Like manual work in the traditional economies, power-levelling is laborious, time-consuming and poorly paid. Pigsy spent almost all his time on the job to get 500-600 yuan (£56-68) every month. Shuxiao's monthly income varied from 1500 to 3000 yuan (£170-341), depending on the progress he achieved and items he found. While the pay is small, it does contribute to the workers' livelihood. Both Shuxiao and Pigsy emphasised the importance of having the income. The other key benefit, not surprisingly, is the sense of value and self-esteem. Pigsy described online working as 'life-changing' because it 'gives me a way to contribute to my family, even though very little'. This can come at a cost, such as the deterioration of their physical and mental condition.

> *The job is very laborious, always overnight. So my back is not good now. It hurts a lot. And sometimes I want to play a game for myself. Real play. I want to enjoy it too. But you see, I can't even talk to people… Without this job I am a useless person, as they said. (Shuxiao)*

As suggested, Shuxiao did not enjoy his job. The only reason he did it was that he had no alternative options. The power-levelling work commodifies repetitive physical labour for a small amount of money, while failing to consider the employees' interest and personal improvement. Moreover, like RMT, power levelling is often seen as 'cheating' in online gaming, and people doing the job are looked down upon. An interviewee working as a freelance programmer saw these jobs as 'having no integrity' (Yuzhi). Even disabled workers themselves thought 'it does not sound good' (Pigsy). The nature of the work prevents disabled people from becoming honoured members of society.

Relation-based e-business

The second form of work is e-commerce, which has boomed in China in recent years. Platforms such as Taobao and Alibaba have attracted millions of users, which has in turn prompted a proliferation of micro-sized businesses. Disabled people are found to actively engage in this 'self as enterprise' approach to create platform-based shops (Lin, Zhang, and Yang 2019). In what follows, the article discusses a recent, relations-based form called WeChat shop. Launched in 2010, WeChat is a mobile social networking application that dominates the area, with over 1 billion active users (WeChat Annual Report 2020). This application allows people to send messages, make video calls, share stream-based content, and make and receive payments. Many people advertise products or advocate companies on this network, which brings them income. One report shows that more than 30 million people started a WeChat business in 2017 (Airui 2017). Huaqiang, a 58-year-old man who has hearing and mobility difficulties, was one of them.

> *It's not even a formal start. I posted a photo of oranges, from a friend's shop. I said 'Great oranges, very sweet, ¥55 for 5 kgs [cheaper than the price shown in the photo], free delivery'. Then my [WeChat] friends messaged me, saying 'Looks good. I will have some'. They paid me immediately [through WeChat]. I did the delivering the next day. It's done! Why not start your own business if it's that simple? Even if people don't buy, you won't lose anything.*

Huaqiang's business involves, by nature, the distribution of goods. He did not produce or stock goods but posted information on his 'Moment', the public status on

WeChat, to attract customers. He requested goods from his distributor after receiving orders. This sort of operation involves almost no costs of renting, stocking or advertising. The essential condition of this form of business is cheap labour and delivery in China: Huangqiang's distributor would deliver the goods he ordered within 24 hours, with no extra cost; and the delivery company would pick up parcels from where Huangqiang lived within the same day. Huangqiang can thus 'do the whole business at home'. In this way, some of the material barriers that restrict disabled people from starting a business (Boylan and Burchardt 2002), are reduced or even negated. Disabled people appreciate this low-risk, affordable manner of selfemployment; some even described it as 'a chance to work equally':

> *I think it is a really good thing, finally a chance to work equally. You see, in the real world, we can't run a shop. You'd need a lot money to do that. You need to search for months to find a good space – shops in good locations are expensive. You must go to the workplace every day. You must find good products and customers. It's too complicated (Huizhen, a 33-year-old woman with manual dexterity impairment).*

While WeChat business relies less on financial capital, it commodifies social relations, which is a key form of social capital in China. One report shows that recommendation by friends and acquaintances is the second most important element in Chinese people's online shopping (China Consumers Association 2016). WeChat encourages acquaintance-based interaction, meaning that people meet offline and exchange WeChat accounts, or else get introduced by people they know 'in reality'. WeChat business thus means the involvement of private relations, such as friendship, in business (Yang, Chen, and Li 2016). Entrepreneurs like Huaqiang and Huizhen start to sell products to people they know and then seek to be recommended to a wider range of potential customers. This has the risk of affecting their social relations and reputations. As pointed out by another participant:

> *You need to have good products. If you are only an agent of others, you can't guarantee the quality of the products. When people are not happy about the products, they come to you, not your distributor. They [the distributor] won't be responsible for your reputation; it's all at your own risk. Or you can find your products, but then you need money. (Fang, a 45-year-old woman with cerebral palsy)*

Meanwhile, since Wechat entrepreneurs do not own any products or means of production, their position in the commercial chain is vulnerable and disposable. Huaqiang admitted that the reason he had an agreement with his distributor was that 'it does not affect his [the distributor's] own business with local people. And he does not need to do anything – just ensure a cheaper price and delivery, which he does for a large amount of buying anyway'. But this cooperation relationship is loose, with no formal contract or commitment. Huaqiang has to cancel orders he receives if the distributor fails to deliver the products. His relations with customers are also unprotected. On WeChat, money transfer is considered a personal activity. While Huaqiang was happy about this informal and flexible business, he realised its risks:

> *I've heard stories about customers claiming they didn't receive the parcel and asking you to resend it. If you don't, they will keep badgering you. I've never met these bad guys. But this is very easy, you know. I don't know how long this*

[service] will remain free and I don't know how big I can make my shop. If I met those guys, I don't know what I could do.

E-business presents both opportunities and challenges for everyone. Getting involved in this fresh industry gives disabled people a chance to participate in economic activities, but at the same time, it involves the pressure to handle or absorb entrepreneurial risks. Disabled people are particularly vulnerable in the process because they often have no alternative source of income or support, for example, a large amount of savings. It only takes a small jolt to push poor people over the edge.

The final risk is competition in the area. For disabled people, technologies and digital forms of business furnish the opportunity to access the economy with fewer barriers. For example Huizhen described herself as 'always want[-ing] to be a businesswoman', and it is in the digital context that she got the chance. E-economy, however, remains a domain of hierarchies and competition. Capital like finance and knowledge still plays an important role in cyberspace, which restricts disabled people from advancing in their business. For example, a participant shut down his e-shop because he found it hard to make a profit.

There is a myth: if you had a chance [to do business], you would earn money. It's not true. Yes, you can easily start an e-shop, but you need good things to sell. You need resources. You can't just sell what others sell. Search 'mask', you can find 2000+ shops. How to make yours distinctive?… So I gave up, it's too hard. If you have those abilities, marketing or management skills, or resources, you can do it. But if you have nothing, and you think you can make money if you just do it, you are too naive (Haochen, a 26-year-old man having mobility difficulties).

ICTs-related knowledge work

Finally, the article examines ICTs-related knowledge work, which is assumed to be a privilege of the information age (Castells 2001). Research in the global north has found that disabled people face barriers in hiring, retention and advancement in the ICTs industry (see Schartz, Schartz, and Blanck 2002 for a review). While such exclusion undoubtedly exists in China, the author met a small group of ICTs-related professionals who have physical impairments. Some of these are online freelancers, while some work in an organised environment.

Yuzhi was a freelance professional living with achondroplasia. After college, he worked from home to develop software. His work routine included seeking work on crowdsourcing forums, biding for suitable tasks, getting temporary contracts or agreements, and then completing tasks to receive payment. All these were done in the cyberspace and on an ad hoc basis. Yuzhi thus favoured ICTs as fundamental drivers of change to the production system:

I think the internet has fundamentally changed how we live and work. Before this, work usually relied on the physical body, right? But with the internet, as long as you can move your fingers, you can use the keyboard, you can work. It's convenient, you don't even have to move [your body], just sitting there and making products. That solves a lot problems.

As with other high-end jobs, what is commodified here is education, knowledge and experience. Physical impairment and its effects have less impact on Yuzhi's 'workability' in this particular area of production. He chose not to reveal his identity as a disabled person in working, because he considered this 'irrelevant'. Disability, however, does affect his choice-making and career-planning. Compared to non-disabled ICTs workers, Yuzhi has 'no retreat' – travelling to work in an offline, often inaccessible workplace is not an option for him. He thus had to adopt a price-cutting strategy, which has a direct impact on his income.

> *Researcher: How is your income?*
> *Yuzhi: OK and low. It sounds high, about ¥7000 (£773) every month sometimes ¥10,000 (£1105) if I take multiple tasks; seems higher than most work, I know. But it's low in my area. That's why they use me. If I want more, I lose to the competition. Non-disabled can work in the workplace, I can't. Of course, bosses prefer people working under their eyes… I can't do that.*

Digital labour can be exploitative, especially for those living in lower-wage economies such as China and India (Dibbell 2007). The situation is even harder for disabled workers like Yuzhi. Even though crowdsourced work can, in theory, be done anywhere, the industry is highly competitive and workers like Yuzhi feel they have no bargaining power. Freelance knowledge work is the best option they can seize when they live in an inaccessible environment. Yuzhi also faces risks associated with the nature of crowdsourced work, such as alienation, fragmentation and exclusion from labour protection (Scholz 2013; Fuchs 2014). He has had to respond to these with individual strategies.

> *Researcher: I heard crowdsourced work can be risky, sometimes people don't pay, is it true?*
>
> *Yuzhi: Yes, that does happen. I don't have much experience myself, once or twice when I started, but just small tasks. You need to check the status and reputation of the employers, some ads are so fake, you can tell that. And it's always better to take jobs from someone you've worked for before.*
>
> *Researcher: What can you do if that happens?*
>
> *Yuzhi: Nothing. You can complain to the host [of the forums], but it's pointless. But thinking from the good side, at least you don't lose any money; it's just a waste of time.*

The other form of knowledge work, which responds to the above risk, is working offline in welfare-oriented production. With the understanding that this would make it 'easier to find a good job, especially for us having physical disabilities', Xiaomin studied computer sciences in college. He and his friends, Haochen, who was also interviewed in the study, worked in one of the biggest social enterprises in China. Their jobs were mainly conducted in the digital space: Xiaomin was a software engineer and Haochen was a programmer. But they worked in an offline, organised, welfare-oriented form. Xiaomin and Haochen signed formal contracts with the social enterprise, worked in an offline office with standard timetables, and accessed the workfare system. The enterprise has created 14 social organisations, which provide services and support to its disabled employees, including (relatively) accessible accommodation, arranged commuting, food provision and even laundry. Xiaomin saw

this a good solution to the employment difficulties for disabled people.

> *[For all] work – online, offline, public or private companies – you need to have abilities, right? I have the ability to develop software, I can make a profit for my company, but I can't use the tube or do what I am doing in ordinary [inaccessible] environments. I think it's a good balance here; it will be easier to arrange these things collectively.*

The cost of such work is low income compared to non-disabled workers. Haochen's monthly salary was between ¥5000 to ¥6000, which was low in his area, even lower than Yuzhi, the e-freelancer working from home. According to one of the directors of the social enterprise, this was because most profits were used for services provision. Both Haochen and Xiaomin accepted the condition of low payment because 'we can't find other places to work. Unless working from home, but then you don't have access to the workfare' (Xiaomin).

The above cases represent knowledge work in the area of ICTs, which is often assumed to have fewer material or environmental barriers. While disabled workers in this area do receive higher salaries than those in digital manual work or e-business, they experience the same problem as their peers in pre-digitalisation contexts, which is that disabled people are not equally employed even if they have equal levels of educational attainment (Ingstad and Grut 2007). This is on top of all the risks associated with ICT work as an industry.

Discussions

This article has analysed three types of digital work performed by Chinese disabled people, in which their physical labour, social relations and ICTs-related knowledge are commodified. Each type involves both empowering and debilitating effects. While there may be other forms of economic participation that have not been identified in the study, the examples cited have provided a wide range of relevant material. The article now proceeds to discuss two features of digital disability employment as found in the examples heretofore discussed.

First is the crucial tension between flexibility and security. Most disabled digital workers do not have a stable employment relationship with one firm. They take contingent, fragmented, short-term jobs; work in self-managed ways and in the cybersphere; and have few connections with their 'employer' or 'colleagues'. Participants of the study identified this flexibility as a key benefit of digital work. They argue that they can organise work according to their individual situation, for example, by adjusting their workload to 'work more if I wanted to earn more money today and take a rest tomorrow'; by determining their work forms, such as 'working in bed'; and by arranging their everyday life, for example, 'only get[ting] up 10 min before my shift'. For them, this means a possibility to take control of the labour process. With the understanding that the social and spatial organisation of work under capitalism is based on able-bodied norms, privileging certain types of bodies and marginalising others, scholars have been attempting to find nonstandard work as an alternative (Parker Harris, Renko and Caldwell 2014; Pagan 2009). This study has identified flexible work arrangements in Chinese cyberspace and their positive impacts on disabled people. The other side of the coin, however, is a lack of security. One experienced worker described disabled people's working condition as one of

many ‘online migrant workers’. People cannot secure lasting jobs, get regular payment, or access a social safety net; not to mention a lack of career advancement. This is the nature of many cyber-precarious jobs (Fuchs 2014). But it has more debilitating impacts on people with impairments because digital work, even at the entry-level, may be their only chance to participate in the economy.

The second feature is an individualised way to respond to employment challenges. Disabled people in China seek and seize work opportunities via information-collection in the course of their own internet usage or through their social networks. They invest personal capital, mainly human resources such as physical labour, time and knowledge, for economic rewards. Throughout the process, these people acted as individuals who had access to the Internet, a firm intention to work online and a certain level of ‘employability’; and disability as a shared identity was less pronounced. Disabled digital workers have few alliances with other cyber workers or disabled workers in the offline world, and therefore few opportunities to develop a sense of belonging or collaborative ties. As a result, both the positive impacts on personal livelihood, self-value and self-esteem, and those negatively affecting one’s physical body and social status, vary at the individual level. Paid employment as a maker and an effective mechanism for disabled people’s social inclusion, as demonstrated in northern literature (Hyde, 2000; Roulstone and Barnes 2005), is less apparent in digital China. Disabled people’s economic participation does not challenge disabling settings and practices; nor does it challenge the market and social structures that persistently marginalise those considered to be non-productive.

To conclude, technological improvements and an expanding cyberspace in China have increased disabled people’s work opportunities and empowered them at the individual level. Despite barriers to access and other restrictions, Chinese disabled people value the opportunity to work in the new economic domain, to make a difference and to contribute to their family. The main benefit, however, is entry to the marketplace, rather than the promise of consistent, high-quality work. The structural barriers for disabled people can hardly be challenged in the absence of broader social and policy interventions.

This article contributes to the understanding of work, disability and ICTs in the following ways. First, it extends the scope of analysis from focusing on barriers to access, to examining disabled people’s activities and experiences in the digital world. The findings of the study suggest that disabled people demonstrate agency in their attempts to secure meaningful work and employ a variety of strategies to participate in the digital working life. The study then highlights the need for more academic attention to be paid to disability and disablement in the ‘new’, ICTs-enabled production/economy sphere. Secondly, the study adds important contextualised information to global discussions about disability and work. The analysis of the data shows how work exclusion has been situated in, and to some extent modified by, a context where a peculiar pattern of production and labouring is emerging. The forms of work presented in the article are distinct from traditional or standard employment in northern societies. The analysis also suggests the potential of welfare production, reflected in the article’s consideration of organised ICTs-related work in the offline world. These experiences contribute to a fuller and more comprehensive picture of global disability employment. They deserve further empirical studies and theoretical engagement with wider topics, such as the relationship between the production

system, government regimes and disability.

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