Abstract

To explore 'what good looks like' for children's play in a digital world, the Digital Futures Commission consulted children, companies, policymakers, regulators and academics. Responding to public scepticism that play online could match the benefits of traditional free play, our research compared insights from play in non-digital and digital contexts and integrated them within a holistic account of how play possibilities emerge from the intersection of people, products and places, conceived at micro, meso and macro levels. This very complexity helps to transcend reductive judgments about digital play and suggests multiple levers for design innovation, synthesised as 'Playful by Design' principles. We operationalised these by co-designing an interactive tool for developers and designers of children's digital play. Finally, by mapping the principles to the UN Convention on the Rights of the Child, we position play as a use case for the broader agenda of Child Rights by Design.

Playful by Design: Embedding Children's Rights into the Digital World

Academics and civil society commonly express scepticism about society's capacity to develop socially responsible approaches to digital designs (such as games, communication tools, online community spaces and services) which are informed by, and uphold, children's needs and rights [1]. There is no doubt that the design, innovation and commercial landscape is challenging to navigate, since product developers face many competing priorities which shape their processes and business models [2]. How do we define and design 'good' digital games, products and services for children and young people (aged 0-18)? How do we create digital environments that excite, entertain, and support them to explore playful possibilities and spaces freely? There are many positive and promising examples of responsible and ethical design which support children's play, but also some concerning trends [3, 4]. Nonetheless, policy makers and regulators find it easier to hold companies accountable for the 'hygiene factors' of safety and privacy, insofar as there exist more guidelines and regulations intended to minimise harm than to enable benefit. Moreover, although interest is growing in rights-based principles for digital policies [5, 6], there are no simple 'key performance indicators' for business and designers to adhere to when embedding children's rights into design; in short, it seems easier to advise designers about what to avoid than what to embrace or aspire to.

In this paper we report on the findings of the Digital Futures Commission[1] (2019-2023), an exciting collaboration between policy makers, industry, academics and civic society who worked together to investigate ways to improve the digital environment for children and young people. This commission was based in the UK and funded by the 5Rights Foundation.

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[1] For information about this work visit https://digitalfuturescommission.org.uk/

Our aim was to help businesses navigate the tricky tensions between safety, security, and privacy with children's right to be heard, and to learn, play and enjoy their civil rights and freedoms while avoiding harmful trade-offs between these factors. In the sections that follow we present the Playful by Design principles we developed [4] and demonstrate how these may serve as a useful pathway for game-designers seeking an entry point into rights-based design [7].

Towards Rights-Respecting Design

The United Nations Convention on the Rights of the Child (UNCRC) [8] was adopted by the UN Assembly in 1989 and is the foundation for children's human rights globally. It is a legally binding international agreement containing 54 articles that set out how governments should meet children's basic needs and, further, to reach their fullest development and potential. Children's rights apply equally in physical and digital environments [9] and encompass protection, participation and provision [10]. Governments are the duty bearers with obligations to uphold children's rights and are required to carry out a 'continuous process of child impact assessment (predicting the impact of any proposed law, policy or budgetary allocation which affects children and the enjoyment of their rights) and child impact evaluation (evaluating the actual impact of implementation)' [11]. Businesses also have responsibilities to protect and respect children's rights and provide remedies when these are infringed [12]. In practice, though, embedding children's rights in the design and development of digital products and services is no simple task, and businesses may lack specialised knowledge or even awareness of the needs of their young users.

One of the distinctive rights of the child, by comparison with human rights instruments, is the right to play [8]. In a digital world, those involved in game design are therefore well placed to ensure that children have positive rights-respecting experiences. While attention to safety by design and privacy by design is, increasingly, on the agenda of games designers, it is important to note that, as with any United Nation Convention rights, children's rights are interdependent and indivisible, and must not be ranked. Hence, it is also important to consider children's agency, creativity, expression, sociality, learning and development – all of which are, indeed, inherent in free play. From a design perspective, then, what is needed is both the minimisation or removal of features that undermine free play (such as intrusive adverts and dark patterns) and, in addition, the *enhancement* of features that support it (such as inclusive and welcoming environments).

Through our research we identified 22 features (including onboarding, pathways, communication and safety) which affected children's experiences in digital environments [4] and explored the positive and negative correlations between these and the qualities of play. However, the picture that emerged was complex. For example, compulsive features that make it hard to stop playing are present in many products and services that support some of the qualities of free play (e.g. open-ended, social, stimulating), but these features are linked to reduced safety and adversely affect voluntary engagement in relation to children's control over how and when they play. The Digital Futures Commission therefore set out to develop tools and resources to support designers to undertake a holistic, rights-based approach to design. These resources include a card-based design tool [2], 'Playful by Design' [4], which supports designers working specifically on products and services that children use

for leisure, such as games and social media platforms. The form and structure of this tool was rooted in an iterative co-design and consultation process with 33 designers across a range of companies to ensure that it could be used in flexible ways across a range of contexts [2]. Recognising the wider implications of such a principled approach to design, and the value of play as a use case to demonstrate the value of our approach, we then created practical guidance for innovators, called 'Child Rights by Design', to support the embedding of children's rights into digital products and services in general [13].

Playful by Design and Children's Rights

Through mixed methods research, we acquired diverse perspectives on 'what good looks like' for children's free play in general and with digital products and services. We began with two extensive literature reviews to explore and understand the qualities of free play [13] and the opportunities and challenges digital products and services present to free play [2]. Honouring children's right to be heard and their right to parental guidance proportionate to the child's evolving capacity, we consulted 63 children (aged 3 to 18), 33 parents and 30 professionals who worked with children across the UK about children's playful experiences with and without digital technologies [4]. Care was taken to ensure diverse representation in terms of ethnicity, and personal and familial circumstances. We then conducted a nationally representative survey with a further 1033 children aged 6 to 17 [15]. Recognising the generative power in the hands of designers and developers [16] to make products and services that enhance rather than hinder what matters to people [17] (in this case, children's rights), we also interviewed 36 adults, including designers, developers, child rights experts and advocates about the architecture of the digital environment and its business practices, to understand opportunities and barriers to improving children's playful experiences online.

We derived our Playful by Design principles from the statistical correlations among the qualities of play that matter to children and childhood, and the features of the digital environment that enables or impedes them, as identified by the research literature and our consultation [15]. The seven Playful by Design principles are aligned with the articles of the UNCRC. Having further synthesized these articles into the 11 principles of Child Rights by Design [13], it becomes possible to explore ways in which designing for children's play in ways that respects their rights can open the door to designing for children's rights in multiple further domains (consider the possibilities for education, health or family life) (see Table 1).

Table. 1 Mapping Playful by Design principles to Child Rights by Design principles and the United Nations Convention on the Rights of the Child

Playful by Design Principles		Mapping to the UNCRC[2]	Mapping to Child Rights by Design
Be welcoming	Prioritise digital features that are inclusive, sociable and welcoming to all, reducing hateful communication and forms of exclusion, and reflecting multiple identities.	Articles 2, 24, 30	Equity and diversity
Enhance imagination	Prioritise creative resources and imaginative, open-ended play over pre-determined pathways built on popularity metrics or driven by advertising or other commercial pressures.	Articles 13-15, 17, 28-30, 31, 32	Participation Agency
Enable open-ended play	Provide and enhance features that offer easy-to-use pathways, flexibility and variety, as these support children's agency and encourage imaginative, stimulating and open-ended play	Articles 12, 13-15, 31	Wellbeing Development
Adopt ethical commercial exploitation	Reduce compulsive features designed to prolong user engagement or cultivate dependency on games, apps or platforms so that children's immersive play is intrinsically motivated and freely chosen.	Articles 3(1), 16, 24, 32, 36	Agency Privacy
Ensure safety	Ensure children's play in online spaces is safe, including giving them control over who can contact them and providing help when needed.	Articles 16, 17, 19, 24, 34-35, 37-40	Safety Privacy
Allow for experimentation	Recognise that exploration, invention and a degree of risk taking are important in children's play, and that the burden should not fall on them always to be cautious or anxious, or to follow the rules set by others.	Article 3(1), 28, 29, 31	Development
Be age appropriate	Respect the needs of children of different ages by providing age-appropriate opportunities for play while also allowing for safe intergenerational play.	Articles 5, 18, 29, 30, 31	Age appropriate

Note: The principles from Child Rights by Design apply to all Playful by Design principles and so are not shown above: the best interests of the child, consultation with children, and responsibility of digital providers.

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[2] For a simplified breakdown of the UNCRC rights please see appendix 1 or visit: https://www.unicef.org/ukraine/media/38876/file/child-friendly-Convention-EN.pdf

These Playful by Design principles provide an entry point for game designers and developers of play experiences to recognize and reflect children's other rights in their products. However, the changes required to realise Playful by Design in practice must be aligned with specific contexts of use related to particular products and services and cannot be reduced to 'tick box' exercises. Because of the complexity of this task, we developed a Playful by Design tool [18] – a set of cards (physical and virtual), and instructions for diverse uses according to the challenges faced by designers. This supports designers to think through possible actions at different stages of design, using a range of prompts and provocations as a guide. This tool was used to explore the challenges faced by designers in a series of design workshops. In these, designers reported that the tool helped them to revisit their priorities and design goals in productive ways and highlighted the potential of the tool to facilitate difficult discussions, onboard new members to design teams, and shape design solutions [2]. Looking to the future then, what needs to be in view when striving for positive change in rights-respecting design? What are the areas in need of development?

An Ecological Approach to Ethical Change

An ecological understanding [19] of the digital world is important when working to improve the experiences of children and young people. There are many intersecting and overlapping factors that shape possibilities for play, realised through particular combinations of social-cultural factors (people), material-functional factors (products) and spatial-contextual factors (places), which intersect and collide in myriad ways. Enhancing rights-respecting free play may require change to occur across any or all factors at all levels: micro, meso and macro. To support this work, we developed an account of the 'kaleidoscope of digital play' [3] to recognise the multiple play possibilities (or twists of the kaleidoscope) that can result, and to identify areas which require further investigation (see Figure 1). In this model a change in any factor or at any level will affect the possibilities for play.

Specifically, to improve the impact of socio-cultural factors, we need to attend to individual experiences and interpretations (micro level), relationships and interactions (meso level) as well as public and private sector policies and practices (macro level) that shape the digital world. We need to consider how children's playful participation in online communities can be supported and ensure that children's developing identities are respected and valued. This may require incentivizing pro-social behaviours online and developing models of mentorship and peer-to-peer support to foster positive civic engagement in online communities [20, 21]. We also need to develop a media education approach that enables children to experience agency when managing risks [22, 23]. Media content should reflect diverse national and global cultures and be created by a diverse range of people (facilitated by both public service providers and private companies) [24, 25]. To better understand children's needs and practices we require innovative research methodologies to investigate children's diverse experiences of play with technologies [26, 27] and intergenerational working groups may help to ensure that children's experiences and concerns inform legislation and industry developments [20]. It is also important that academics communicate relevant research findings to industry in ways that are effective and actionable [27, 28].

Figure 1. The kaleidoscope of playful possibilities: factors that affect free play in a digital world [3]
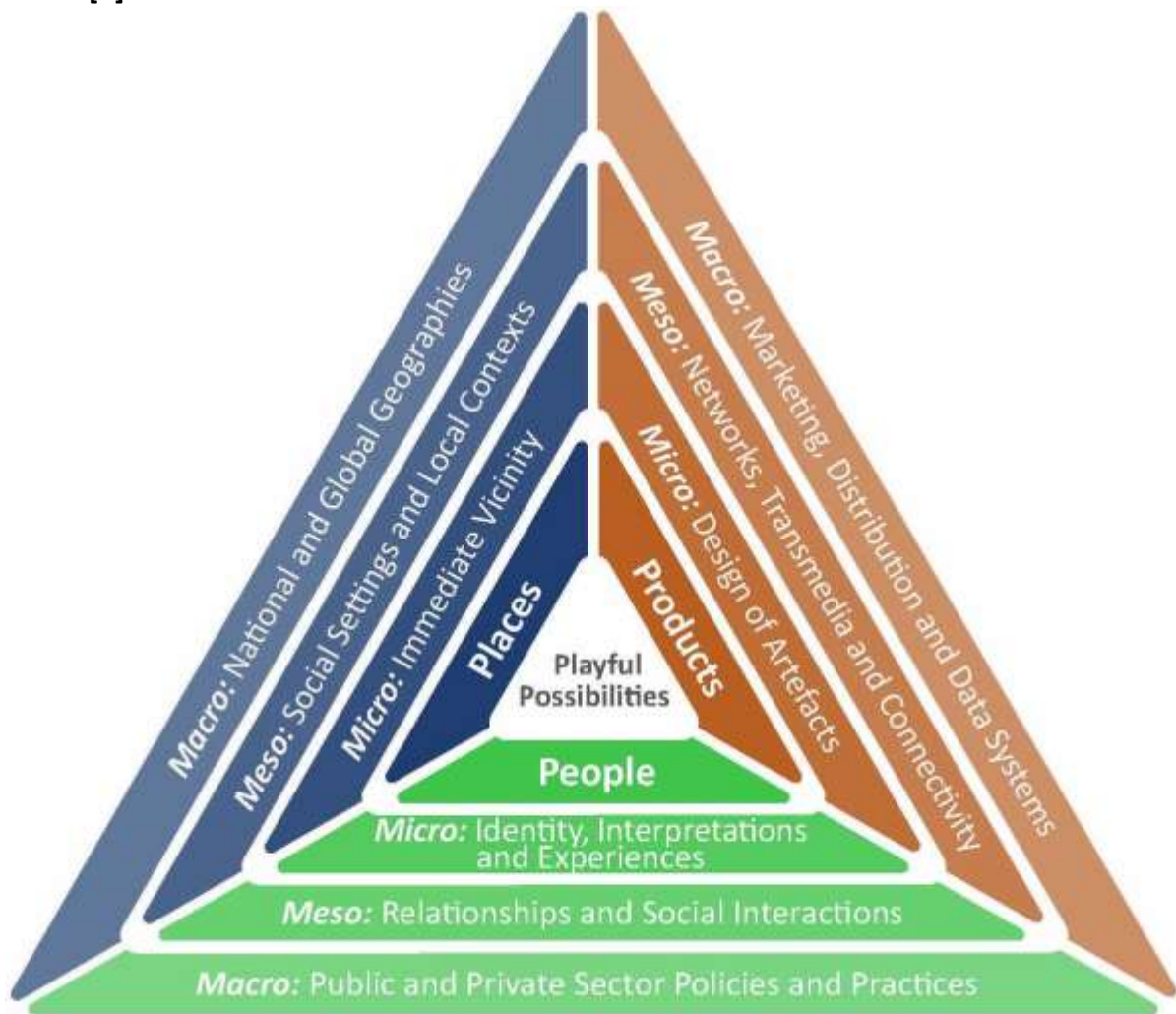
To improve the impact of material-functional factors (products) we need to attend to the design of artefacts (micro level) as well as the ways that networks, transmedia and connectivity shape play (meso level) and address the impact of marketing, distribution and data systems (macro level). Children move fluidly across digital and non-digital experiences in play [29] and we need to continue to explore the potential of the 'metaverse' in relation to children's play and creative production practices [25, 30]. To support children's imaginative engagement and ensure products are welcoming we need to avoid overloading children with marketing messages during play [31, 32, 33] and design for child-led improvisation and modification [34, 35]. Efforts must be made to ensure that personalised algorithms are aligned with the interests and needs of young children [36, 37] and we need to eliminate 'dark patterns' such as nudges to share data that are not in the best interests of the child [38]. We will also need to draw on research into child development, so we are respectful of children's evolving capacities [39, 28] and develop transparent communication policies and practices that can be understood by the youngest children [40].

Enhancing, contextual-spatial factors (places) will involve improving environments so that they better support free play. For example, age-appropriate and inclusive online 'neighbourhoods' may provide safe and exploratory environments that are respectful of

children's developing capacities [30, 41, 42] and smart home devices, which children have easy access to, must be designed with their safety, wellbeing and privacy rights in mind [43]. Further exploration of the potential of virtual reality, wearable technologies and connected toys is needed [44, 45] particularly in relation to how these might encourage children to play in and around their local environments through active design practices [46] and outdoor play [47]. We must facilitate access to digital and non-digital resources through inclusive and accessible design which will involve supporting hybrid intergenerational play across and within physical and virtual domains. This is particularly relevant as digital gameplay becomes increasingly dispersed across various technologies, activities, and settings [48]. Community spaces that enable children to creatively combine physical and digital resources during play are important, (e.g., makerspaces [49, 50] and digital playgrounds [46, 50. 51]) and we need to support children's freedom of movement and autonomy as they select and play with technology in educational settings [52]. We require global comparative studies to develop a nuanced understanding of cultural differences between media use [53, 54] and further collaborative international studies which investigate the potential of new opportunities for gameplay across contexts. We also urgently need age-appropriate regulations and safety measures relating to geo-tracking data and other surveillance technologies [55].

Conclusion

Given the complexity of the 'ethical design' challenge, collective action between policymakers, academics, educators and industry is needed to ensure that the digital world offers a rights-respecting environment where children can thrive. The Digital Futures Commission concluded its work in 2023, but we are committed to continuing the work we undertook together through the new Digital Futures for Children centre joint with LSE and 5Rights, and 'The Digital Good Network' at the University of Sheffield. The Playful by Design principles presented here have already begun to inform design thinking within industry settings [2]. They have also informed policy discussions with the OECD [56] and UNICEF [57], particularly in relation to supporting children's wellbeing. We acknowledge that rights-respecting design is not an easy undertaking. However, modifying designs in retrospect to address children's rights after a product has been developed can be more difficult and expensive than ensuring that they are embedded in an iterative way, at every stage of the process. We therefore suggest that our Playful by Design principles, and associated tool [18], may provide game-designers with an entry point into rights-respecting ethical design, and provide a language with which to articulate this commitment to stakeholders and users of products. As a pathway to Child Rights by Design, Playful by Design offers a roadmap for game-designers and innovators of playful experiences, as we navigate the challenges together and shape new possibilities for children's participation in the digital environment.

Acknowledgements

Appendix 1: THE UNITED NATIONS CONVENTION ON THE RIGHTS OF THE CHILD – THE CHILDREN'S VERSION https://www.unicef.org/ukraine/media/38876/file/child-friendly-Convention-EN.pdf)

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