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Towards a biblical mind

Designed for joy?

Reflections on the creation and use of digital technology

By Jennifer George and Rachel Siow Robertson

Summary

As digital technologies become embedded into our places of work, education, and leisure, many people have voiced concerns about their adverse effects. Daily technology seems often to either drain our pleasure or promote pleasures which are detrimental. This reveals a need to distinguish between pleasures which support or diminish wellbeing when it comes to the design and use of technology. We argue that a theological and psychology-informed notion of joy can help do this, informing goals for the design and use of digital technology.

Digital technology and the problem of pleasure

Last year, software designer Danilo Campos shared a story from his time spent volunteering to help seniors with their technology:

> 'Recently, one of my regulars came in with a Lenovo laptop. It still had a retail sticker; I imagine she bought it used, but she still paid over $500. She was baffled: "I bought this so recently, how is it already so slow?"
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> '…She's right: her CPU capacity[1] was saturated at regular intervals. This laptop was barely usable. … I try to launch Lenovo's frontend for all of this junk… And it gets so much worse. … As I was digging around I realized what's going on: Lenovo wants surveillance turf. They want a "relationship" with the customer that's a thinly veiled back door into their machine. How often does the trackpad really need a firmware update?'[2]

Campos' story went viral on Twitter. What resonated with so many was that frustrations seemed to be built into laptops, phones, and other devices which they depended on to do their daily tasks. In Campos' case, the laptop came loaded with junkware: software which purported to support updates and keep systems running, but in fact used up processing power and opened a back door for displaying ads and monitoring the user.

As Campos' story suggests, everyday technology is often associated with negative emotions. Everyday digital technology, also known as ubiquitous computing, has become a huge part of our lives, whether we are young or old. At home, this includes waking up with smart 'wakey' lights, watching TV, or video-calling a friend. When out and about, technology comes with us in the form of phones, Fitbits, and tablets, and we encounter ticket machines, information kiosks, and ATM machines. In all these arenas, we can face frustrations and complications. We get stuck in automated call loops when trying to access important social services, and struggle to use unfamiliar

Daily technology seems often to either drain our pleasure or promote pleasures which are detrimental.

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1 'CPU' means Central Processing Unit.
2 Danilo Campos, 'Junkware Is Elder Abuse and a Menace to Society', *TWC Newsletter*, 2022 https://news.techworkerscoalition.org/2022/11/15/issue-18/.

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laptops, microwaves, and TV remote controls. We feel anger and despair in the face of hateful and harmful content delivered by technologies, such as disinformation or images promoting unrealistic body standards. Much has been written about the negative societal effects of technology, including high levels of loneliness and polarisation.[3]

Technologists and researchers, Christian and non-Christian alike, have offered useful critiques and suggestions for the use and regulation of technology. However, there is a need for positive suggestions about what to do further upstream in the technological ecosystem – in the area of design, where so many of our difficulties seem to be already built in.

In fact, recent approaches to design have moved away from focusing on utility and function, and instead concentrate on end-user happiness as the aim and measure of the design process.[4] These approaches prioritise pleasure taken in using digital devices themselves, as well as pleasure taken in accessing content delivered by technology, such as music, games, and messages. This may sound like a welcome development, but the difficulty is that pleasure does not always mean wellbeing. Pleasures supported by digital technology can be akin to short-term emotional 'highs' of addictive patterns of behaviour like gambling. Pleasure can also be taken in harmful behaviour such as trolling and bullying,[5] or distracting ourselves through scrolling on social media without engaging deeply.[6] The focus on pleasure has done nothing to curtail surveillance, as companies continue to collect data on which content and behaviours keep us engaging with their products. Unfortunately, outrageous, salacious, and addictive content and behaviour support high levels of engagement; as a result, destructive pleasures get recorded and promoted under this 'Surveillance Capitalism' business model.[7] Fixing up a laptop to access content faster is no guarantee of wellbeing, in light of senior internet 'addiction' and susceptibility to scams.[8]

Thus, some declare that 'designing for "delight" is dead',[9] arguing we should promote wellbeing.[10] For example, in an attempt to show how design can be about 'creating opportunities for people to have pleasurable and meaningful experiences', Anna Pohlmeyer and Peter Desmet focus on three components of wellbeing: pleasure, personal significance, and virtue.[11] However, they take a simple view
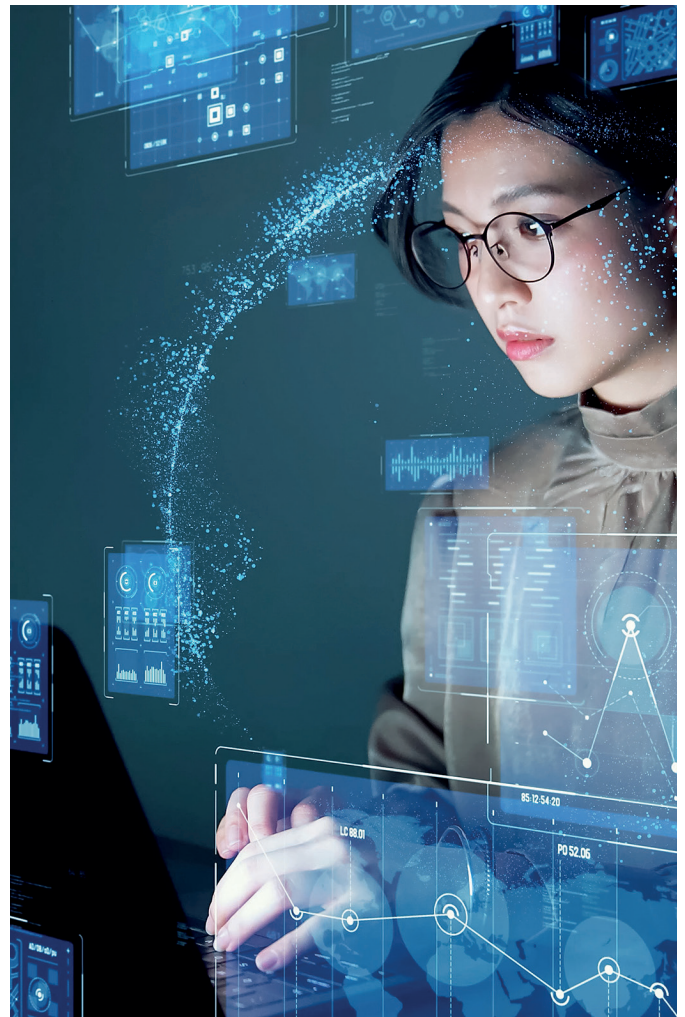
that increasing pleasurable experiences improves wellbeing. There is still a need to distinguish between pleasures which benefit or hinder wellbeing.

This paper proposes the concept of joy as pleasure which supports wellbeing. Although joy can be understood in different ways, the notion we pursue is the deep pleasure which arises when things are going well within us and between us, the world, and others. From a theological perspective, joy is a uniquely important attribute for design, as it is the experience of following after the wise arrangements of the Creator and relating rightly to his words, works, and people. The Fall distorted this experience, but God in his

3 Patrick Parkinson, 'The Loneliness of the Digitally Connected', *Cambridge Papers*, December 2022 https://www.cambridgepapers.org/the-loneliness-of-the-digitally-connected/; Anne Applebaum and Peter Pomerantsev, 'How to Put Out Democracy's Dumpster Fire', *The Atlantic*, April 2021 https://www.theatlantic.com/magazine/archive/2021/04/the-internet-doesnt-have-to-be-awful/618079/?te=1&nl=morning-briefing&emc=edit_MBE_p_20210310&section=whatElse.

4 Hendrik Müller and Aaron Sedley, 'HaTS: Large-Scale in-Product Measurement of User Attitudes & Experiences with Happiness Tracking Surveys', in *Proceedings of the 26th Australian Computer-Human Interaction Conference on Designing Futures: The Future of Design*, OzCHI '14 (New York, NY, USA: Association for Computing Machinery, 2014), pp.308–15 https://doi.org/10.1145/2686612.2686656.

5 Evita March and Genevieve Steele, 'High Esteem and Hurting Others Online: Trait Sadism Moderates the Relationship Between Self-Esteem and Internet Trolling', *Cyberpsychology, Behavior, and Social Networking*, 23.7 (2020), 441–46 https://doi.org/10.1089/cyber.2019.0652. Sali Hughes 'I Met the Woman Who Trolled Me Online', BBC News, 2020 https://www.bbc.co.uk/news/uk-54421632.

6 Amanda Baughan, Mingrui Ray Zhang, Raveena Rao, Kai Lukoff, Anastasia Schaadhardt, Lisa D. Butler, and others, '"I Don't Even Remember What I Read": How Design Influences Dissociation on Social Media', in *CHI Conference on Human Factors in Computing Systems*, 2022, pp.1–13.

7 Jonathan Ebsworth, Samuel Johns, and Michael Dodson, 'Surveillance Capitalism: The Hidden Costs of the Digital Revolution', *Cambridge Papers*, 2021 https://www.cambridgepapers.org/surveillance-capitalism-the-hidden-costs-of-the-digital-revolution/.

8 Julie Jargon, 'Tech Savvy or Tech Addicted? Older Adults Are Stuck on Screens, Too', *The Wall Street Journal*, 16 July 2022 https://www.wsj.com/articles/who-is-more-glued-to-screens-grandkids-or-grandparents-11657976401.

9 Alex Klein, 'Designing for "Delight" Is Dead', *Medium*, 25 October 2022 https://uxdesign.cc/designing-for-delight-is-dead-677bca6aebd1.

10 Humane by Design (humanebydesign.com/) and the Center for Humane Technology (www.humanetech.com/).

11 P. M. A. Desmet and A. E. Pohlmeyer, 'Positive design: an introduction to design for subjective well-being', *International Journal of Design*, 2013. Vol 7, No 3, pp.5–19.

grace has provided a way back to right relationships and joy. By placing technology within this narrative, we offer a vision of joyful design of technology which prioritises restored rather than exploitative relationships, and joyful use of technology which is sensitive to its relational benefits and pitfalls.

Some may question whether any framework can correct the course of major tech companies, and whether a theological approach will be useful for non-Christian designers and users. In response, we are encouraged by the proliferation of approaches which seek to design for wellbeing, and the example of Campos and other technologists in networks like the Tech Workers Coalition. Joy also finds backing in positive psychology, which has attempted to set joy apart from other positive emotions like happiness. Although approaches in design and psychology might be seen as more human-centred than God-centred, we see value in exploring common ground and bringing biblical resources on wellbeing to bear on technology.

In what follows, we consider joy from theological and psychological perspectives, and apply these understandings to the design and use of digital technologies.

Visions of joy

Four aspects of joy, discernible in a biblical understanding, may be highlighted to enrich our frame of reference for developing and engaging with technology: joy is relational, rightful, both gift and command, and leads to creative worship.[12]

Joy is relational

If you keep My commandments, you will abide in My love, just as I have kept My Father's commandments and abide in His love. These things I have spoken to you, that My joy may remain in you, and that your joy may be full. (John 15:10–11)

The relationality of joy begins with God as Trinity. Jesus speaks to his disciples of his joy, which is the joy that the Son takes in being part of the Trinity through obedience to the Father. The Father declares that he is 'well pleased' ('delights in') the Son (Matthew 12:18; Isaiah 42:1).

The joy of God spreads outwards from the Trinity, encompassing his relationship with creation. A psalm of praise to God, which marvels at his works of creation, is crowned with the exclamation 'May the glory of the LORD endure forever; May the LORD rejoice in His works.' (Psalm 104:31). Indeed, God rejoices in creation, which in turn responds in joy: birds 'sing among the branches' (104:12), the earth is 'satisfied with the fruit of [God's] works' (104:13); and humans, too, rejoice in what God provides, 'bread which strengthens man's heart' and 'wine that makes glad the heart of man' (104:15), and in God himself (104:34).

Indeed, mutual joy is to lie at the heart of the relationship between God and humanity. God rejoices over his people with singing (Zephaniah 3:17); Jesus invites us into the relational joy of the Trinity through obedience to the Father so that our 'joy may be full' (John 15:11).

Further, humanity finds joy in participating, as God's image-bearer, in God's relationship with creation, through their own creative activity. This includes building the tabernacle, as God declares that he has provided the chief craftsman Bezalel with skills for the task: 'I have filled him with the Spirit of God, in wisdom, in understanding, in knowledge, and in all manner of workmanship…' (Exodus 31:2–5). Ecclesiastes bears witness to the delight we can find in work and creativity, and yet to the elusiveness of lasting satisfaction in our projects (Ecclesiastes 2:10–11). An outpouring of joy characterises key moments in the project of building the Temple (2 Chronicles 7:9–10). A feature of our future rejoicing will be, according to some readings of Revelation, bringing our cultural riches and technological achievements with us into the New Jerusalem (e.g., 'they shall bring the glory and honour of the nations'; Revelation 21:26).

Last, but far from least, joy is intended to be a shared, and communal, reality. At the annual festival in Israel to celebrate the harvest safely gathered in, the feasting and rejoicing was not for family members alone. Households were to gather into their celebrations 'your male servant and your female servant and the Levite, the stranger and the fatherless and the widow, who are within your gates.' (Deuteronomy 16:14). In a small way, such feasting prefigures humanity's destiny: joy in community with God and each other, as we will one day gather to rejoice and give God glory at the wedding supper of the Lamb:

'Let us be glad and rejoice and give Him glory, for the marriage of the Lamb has come, and His wife has made herself ready.' And to her it was granted to be arrayed in fine linen, clean and bright, for the fine linen is the righteous acts of the saints. (Revelation 19:7–8)

The relational nature of joy is reflected in psychological studies which suggest that most cases of joy are 'affiliative', or 'joy that is shared with others'.[13] The 'broaden and build' tradition of developmental psychology suggests that joy

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12 The words 'joy', 'joyful', 'enjoy' and 'rejoice' appear in the Bible between 265 to 430 times, depending on the translation.

13 Matthew Kuan Johnson, 'Joy: A Review of the Literature and Suggestions for Future Directions', *The Journal of Positive Psychology*, 15.1 (2020), 5–24 https://doi.org/10.1080/17439760.2019.1685581. C. M. Meadows, *A Psychological Perspective on Joy and Emotional Fulfillment* (New York: Routledge, 2014)

burdensome to God if they coexist with or perpetuate injustice and idolatry. Isaiah expresses God's distaste, even hatred, for Israel's assemblies, appointed feasts and futile sacrifices, if these are accompanied by evil deeds and injustice.[18] God calls on his people instead to: 'Rebuke the oppressor; Defend the fatherless, Plead for the widow.'[19] Injustice hinders or perverts joy as it involves relating wrongly to each other in violation of God's commands.

The problem of injustice runs alongside idolatry, which can be understood as relating wrongly to creation in violation of God's commands. In Isaiah, God rebukes Israel for their reliance on their building projects, a new reservoir in Jerusalem and reinforcements to their fortifications, rather than dependence on him (Isaiah 22:10-11; see also the story of the Tower of Babel in Genesis 11). God alerts his people to the sheer folly of relying on 'metal gods' to tell them what will happen or what to do (Isaiah 44; 48:5-7). Technological achievements are no cause for joy when people rely on them rather than God.

The rightfulness of biblical joy marks an important difference with fallen pleasures, which are detrimental to wellbeing. Some psychological studies suggest that joy has cognitive aspects, as it involves making a judgement about the object of joy. This judgement incorporates normative elements, as the object of joy is judged to be good.[20] Although there is no one definition of joy within psychology, one experience that has been identified is an intense feeling of fulfilment and a deep alignment between some good in or between the world, oneself, and others. For this type of joy, there is a judgement of rightfulness: that things are going well or as they should be.

Joy is both a gift and command

Then he said to them, 'Go your way, eat the fat and drink sweet wine and send portions of them to those for whom nothing is prepared, for this day is holy to our Lord; and do not be grieved, for the joy of the Lord is your strength.' […] And all the people went their way to eat and drink and to send portions and to make great rejoicing (Nehemiah 8:10-12 NRSVA).[21]

For Christians, joy is a fruit of the Spirit and a gift from God (Galatians 5:22). At the same time, we are called to rejoice regardless of our circumstances (Philippians 4:4), and we find on occasions, as in Nehemiah

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builds new social relationships and resources, as it promotes activities supporting these resources, including play and free action.[14]

Joy is rightful

'Let My people go, that they may hold a feast to Me / serve Me.' (Exodus 5:1; 8:1)

Joy comes through relationships within and between God, creation, and people, but only when those relationships are rightful. Joy is associated with holiness in obedience to God's law (e.g. Psalm 119). The connection to rightfulness may be surprising, because joy tends to be associated with freedom from rules.[15] Nevertheless, when God delivers the Israelites from bondage, he calls them to live within the safe constraints of God's commandments and to worship him. Similarly, Jesus associates his own joy and the joy of his followers with obedience to the Father.[16] Joy sits alongside love, peace, and other fruits of the Spirit, gentleness and meditation on things of virtue, and the 'fine linen' of righteous acts.[17]

However, occasions of joyful celebration are weary and

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14 F. A. Huppert, N. Baylis, B. Keverne, and Barbara L. Fredrickson, 'The Broaden-and-Build Theory of Positive Emotions', *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences*, 359.1449 (2004), 1367–77 https://doi.org/10.1098/rstb.2004.1512.

15 For further discussion, see Matthew Kuan Johnson and Rachel Siow Robertson, 'How Can Joy Be a Divine Command If It Is Not Within Our Control?', *Theological Puzzles* (Issue 7), 2022 https://www.theo-puzzles.ac.uk/2022/05/02/robertson-johnson/.

16 John 15:9–11.

17 Gal. 5:22–23; Phil. 4:4–8; Rev. 19:6–9.

18 Isa. 1:11, 14, 16–17.

19 Isa. 1:16–17.

20 Matthew Kuan Johnson, 'Joy: A Reply to the Replies', *The Journal of Positive Psychology*, 15.1 (2020), 84–88 https://doi.org/10.1080/17439760.2019.1685582. Robert A. Emmons, 'Joy: An Introduction to This Special Issue', *The Journal of Positive Psychology*, 15.1 (2020), 1–4 https://doi.org/10.1080/17439760.2019.1685580.

21 New Revised Standard Version Bible: Anglicized Edition, copyright © 1989, 1995 National Council of the Churches of Christ in the United States of America. Used by permission. All rights reserved worldwide.

8, that God commands his people to take themselves in hand, stop mourning and start rejoicing.[22] Some mainstream understandings of joy regard joy, like happiness, as an emotional response dependent on circumstances, However, other approaches incorporate the suggestion that joy is closely related to gratitude and a sense of the unexpected or undeserved, as well as the suggestion that people who have developed a dispositional form of joy 'experience joy more frequently across a wider variety of circumstances'.[23]

Joy leads to creative worship

Joy in the Bible is associated with feasting, dancing, singing, composing, anointing, and even tears.[24] Joy in worship takes many forms, from David composing songs and dancing before God, to the decoration and art in the Temple, to the four living creatures and twenty-four elders worshiping the Lamb upon the throne singing 'holy, holy, holy!' (Revelation 4:8)

In psychology, a comparable range has been observed, both in the manifestations of joy and the emotional texture of joy. In the 'broaden and build' tradition of psychology, joy is associated with a wide range of behaviours, including free actions, spontaneous smiling, creative play, and a 'chin up posture'.[25] Robert Plutchick developed a wheel of emotions in which joy features as the opposite of sadness, with ecstasy as the more intense end of the spectrum of joy, and serenity on the less intense end.[26] On the Junto wheel of emotions, joy has twenty-four statuses ranging from feeling content, to enthralled or pleased, to rapture.[27]

In summary, joy is a pleasure which comes through rightful relationships, can be sustained during adverse circumstances in support of overall wellbeing, and finds creative expression in a variety of behaviours.

Designing for joy

The fields of Human Computer Interaction (HCI) and User Experience (UX) encompass the study of the design of digital interfaces and how humans behave when using them. HCI frameworks bring together the different stages of the design process and explore what each stage involves.

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UX evaluation metrics measure impact on users, examining both the impact of an artefact (the technological device and its design) as a medium and the impact of its message (the content delivered through the device).[28]

Typically, even if a design process engages with positive emotions of users, only a limited part of user experience is considered, as few technologies are created with the intention of giving joy without the 'message'. For example, when a smart TV (the medium) is designed, the joy element is at most measured by the lack of frustration in operating the remote controller. It would be the movie (the message) that has the burden of providing joy. So, joy has been left out of design processes, evaluations, and user manuals of everyday technologies for the most part. In response, we apply our considerations of joy to the design process articulated in HCI and UX evaluations.

Embedding joy in the design of technology

According to work in HCI, most technology design processes will have the following steps: Requirement Specification, Design, Implementation, and Testing/Evaluation. The table overleaf builds on the 'Working to Choose Framework' developed by Gilbert Cockton,[29] which aims to establish a balance of worth across four design arenas, including the stakeholders providing requirements and participating in evaluations (Beneficiaries), the work of continuous analysis and reflection with stakeholders (Evaluations), the design solutions themselves (Artefacts), and the Purpose of the design work.[30]

We suggest that joy could be involved in the steps of the design process, and the choices made within them, in various ways, as shown in the table overleaf.

By considering stages of design before the testing/evaluation stage, we can highlight important roles for 'joy' as a criterion earlier in the process, such as whether the joy of the user is included in requirement specifications, and whether the joy of the design and development team is considered at all. A deliberate procedure for taking account of joy at these earlier stages may afford an opportunity to address potential ethical issues (such as exploitation

22 On how to resolve the seeming tension between gift and command, see Matthew Kuan Johnson and Rachel Siow Robertson, 'How Can Joy Be a Divine Command If It Is Not Within Our Control?', *Theological Puzzles* (Issue 7), 2022 https://www.theo-puzzles.ac.uk/2022/05/02/robertson-johnson/.

23 Philip C. Watkins, Robert A. Emmons, Madeline R. Greaves, and Joshua Bell, 'Joy Is a Distinct Positive Emotion: Assessment of Joy and Relationship to Gratitude and Well-Being', *The Journal of Positive Psychology*, 13.5 (2018), 522–39 https://doi.org/10.1080/17439760.2017.1414298.

24 Neh. 8:10; 2 Sam. 6:14; Jas. 5:13; Ps. 33:3; Ps. 45:7; Jer. 31:7–9.

25 Barbara L. Fredrickson and Robert W. Levenson, 'Positive Emotions Speed Recovery from the Cardiovascular Sequelae of Negative Emotions', *Cognition and Emotion*, 12 (1998), 191–220 https://doi.org/10.1080/026999398379718.

26 R. Plutchik, The Nature of Emotions: Clinical Implications. In: M. Clynes and J. Panksepp, (eds) *Emotions and Psychopathology.* (Springer, 1988). https://doi.org/10.1007/978-1-4757-1987-1_1

27 The Junto Institute for Entrepreneurial Leadership (2021), The Emotion and Feeling Wheel, Available at: https://www.dianaswillinger.com/wp-content/uploads/2021/07/Emotion-Wheel-Junto-Institute.pdf

28 This draws from the famous phrase, 'the medium is the message'. In a design context, this means that the artefact and its design is as important as the content delivered through it. Marshall McLuhan, *Understanding Media: The Extensions of Man* (McGraw-Hill, 1964).

29 G. Cockton, *Worth-Focused Design, Book 1: Balance, Integration, and Generosity.* (Morgan & Claypool, 2020). Jennifer George, 2016. 'A Case Study of Balance and Integration in Worth-Focused Research through Design.' PhD thesis, Northumbria University, June 2016.

30 Compare the framework in John Heskett, *Design: A Very Short Introduction*, Very Short Introductions (Oxford, New York: Oxford University Press, 2005).

Design stage	Usual activities	Role of joy in the design stage	Possible questions to ask
Requirement specification The details of what the customer wants, which would normally align and contribute to the mission statements of the organisation.	Consulting a range of stakeholders to understand needs from various perspectives.	Weighing up the joy of all stakeholders and making it part of the specifications for the end product and experience (this could be as message, as medium, or as both).	Is the joy of the *beneficiary* included as part of the *purpose*? Who is the *beneficiary* of the joy in focus? What is the intended *purpose* of the *artefact*, and how is this *evaluated* against the joy of the *beneficiaries*? In what ways do the *beneficiaries* have joy as a *purpose*?
Design Forming the technical and functional aspects of the artefact.	Sketches, prototyping, and testing the designs with a sample of real users.	Promoting the joy of the design team in their work of creation and real users who are testing it.	What are specific features of the product or service (*artefact*) which could support joy (e.g. beauty)?
Implementation Testing the artefact before it is released for consumption.	Testing the full development product/service with a sample of real users.	Promoting the joy of the development team in their work of creation and real users who are testing it.	Does the implementation process give joy (*purpose*) to the developers?
Testing/Evaluation Assessing what the product gives to the user, iteratively between design and implementation.	Taking physical and physiological measurements, pre- and post-use questionnaires, interviews and focus group discussions.	Assessing experiences of enjoyment: if the product gives joy to the user, the type of joy this is, and an evaluation of this joy. This includes joy taken in the medium (e.g. aesthetics and beauty) or joy taken in the message. Assessing if there are right relationships as part of integrity checks, including evaluating the power balance between the supplier and user.	Do *evaluations* include measures of joy (*purpose*), including the motivations, intensities, and activities associated with use of the *artefact*? Is there a consideration of long-term impact, reflecting the persistent nature of joy? Is joy *evaluated* at various stages of design and implementation (*artefact*)?

of workers or designing for addiction) or enhance the aesthetics of an artefact and the user's experience of the medium as well as the message.

Consider the example of a laptop for seniors: a laptop is primarily a medium rather than a message. During the requirement specification phase, it is important to ask if seniors were consulted about the kind of laptop they would like. Considerations could include the weight, size, easier access to accessibility features, and a clear picture of the purposes for which seniors would, and would not, wish to use a laptop. Thereafter, questions would concern how enjoyable their experience is in the design and implementation stages with how it looks and feels physically.

Evaluating the experience of joy in the use of technology
User Experience (UX) can be assessed in terms of physical and physiological measures, such as pupil dilation, baseline activity of emotions, generic emotion change, and facial expression.[31] However, these measurements are usually taken only during the evaluation, commonly no more than an hour of observation, and are assessed relative to a baseline measured at the start of the evaluation. UX can also be evaluated through questionnaires, asking, for example, how the user felt, and about their emotions when they used the artefact at various evaluation points in the design process.

However, unless evaluations take place for a long time, a questionnaire cannot measure whether the artefact

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31 The tools used to undertake such measurements include eye tracking devices, biosensors including ECG, Galvanic Skin Response, and a Facial Action Coding System.

continues to give lasting joy to the user. Furthermore, work needs to be done to investigate appropriate proxies for elements of joy which may seem more intangible, such as its rightfulness and relationality.

In our own research, we have developed a UX framework identifying five elements of joy which can be approached through questionnaires and interviews.[32] *Motivation* relates to the creative aspect of joy. *Integrity*, *Intensity*, and *Normative* focus on relationality and rightfulness. *Dependence* reflects the giftedness of joy. Importantly, these dimensions go beyond standard measures of satisfaction and useability.

In assessing user experience of a laptop, we could check in on the *relational* and *rightful* aspects of joy, asking about how well the laptop satisfies the user's connection to the world, themselves, and others, and whether pleasurable experiences facilitated by the laptop have any negative connections such as struggle, outrage, schadenfreude or sadism. We could investigate the *giftedness* of joy by asking about whether users have awareness of external factors supporting their experience, such as through gratitude. The *creative* aspects of joy are reflected in questions asking to what extent different factors motivate the use of a laptop, including freedom and ability to experiment, pursuing or achieving goals, and beauty and aesthetic factors.

Using technology for joy

Users cannot know which frameworks and requirements have been used to create technologies, and must make choices on what technologies to use, and how to use them, based on what they see of the end product. We now consider how the dimensions of joy we identified earlier relate to these choices.

Relational joy

Joy is relational, so a question to ask is whether a technology that gives us joy takes away a more meaningful joy and specifically, our joy in a relationship with someone else. The Bible being available via a mobile app means we can listen to it when carrying out other mundane tasks. However, does this take away a more precious, undivided time we give God when we would read the Bible or listen to it with all our attention? It is also easy to forget relationality when our communications with others are mediated by technology. Sometimes, this mediation can encourage somebody even with good intentions to act in harmful ways, such as tweeting aggressively when they would not take the same tone in person. One sphere that this applies to is our work relationships, where we find that emails and instant messages are the norm for communicating. Do we still take the time to walk over to another part of the workplace to meet someone in person? By contrast, assistive technology removes barriers to information and interaction in ways that facilitate relational joy – and rightful joy – as people are empowered to communicate, learn, and live in fulfilling ways that would otherwise not be possible.

Rightful joy

Here, questions to consider are who the tech gives joy to, why it gives joy, and if this hinders other forms of joy. This dimension compels us to resist counterfeit joys. A person might take great pleasure in trolling, but they are not relating rightly to the world (as they may spread misinformation for fun) or other people (as they deliberately say hurtful things). Again, when we use social media, pleasure in receiving likes or shares might generate online behaviours which distract us or distort our relationships. However, technology offers huge potential to generate constructive joy given its capacity to disseminate information widely and build networks, for example, through global fundraising initiatives or crowdsourcing information during natural disasters.

> The joy of salvation, the joy that comes from the Holy Spirit who works in our hearts and gives us the discernment as we make our choices, cannot be provided by technology.

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32 Rachel Siow Robertson, Jennifer George, and Matthew Kuan Johnson, 'MIIND and HEART: Measuring and Designing for Thicker Qualities of User Experience', *Conference Proceedings of CEPE 2023*, in progress.

Joy as gift and command

While it is helpful to reflect on how our use of technology promotes joy, we need to remember the limits of technology. The joy of salvation, the joy that comes from the Holy Spirit who works in our hearts and gives us the discernment as we make our choices, cannot be provided by technology. We can remember Isaiah's warning not to rely on 'metal gods' to guide us when we interact with today's technologies.

In light of the biblical command to rejoice, we can consider joy and technology in a specifically Christian context. Technology can help to share the gospel: the printing press allowed Bibles to be read widely; now Bible apps in different versions and languages enable its access even more widely. In the UK, most churches use audio systems; many churches use an overhead projector for sermons and songs; some churches use visual aids or digital art to enhance worship or pre-recorded music if musicians are not available. During the COVID-19 pandemic, many churches resorted to 'Zoom church' enabling the virtual gathering of people to connect, to worship, to listen to hymns, choruses, prayers, and a sermon. Technology can help us overcome obstacles to worship, or enhance people's sensory experiences, but we need to be alert to the possibility of technology creating an undue emphasis on our 'experience' and less emphasis on encounter with God and deepening relationships with the family of believers.

Creative joy

We can be careful to avoid narrowing down our joy by restricting ourselves to the limited range of possibilities offered by technologies to signal emotion, intent, concern, and so forth. This limited range can still be a useful way of supporting a relationship, especially in cases where constant physical presence is not possible or needed. Furthermore, technologies working as a buffer or safety net for social anxiety can be helpful as part of an ongoing relationship.

The Christian notion of joy is a rich resource for thinking about design and use of digital technology.

However, in embodied encounters, there is a greater range of emotional reactions and possibilities for sharing joy, not least in providing practical support to someone in need.

Conclusion

Although many digital technologies seem, whether deliberately or inadvertently, to drain our joy, we have seen that researchers and technologists are showing a growing interest in developing new goals and design processes which promote user wellbeing. However, user wellbeing is an elusive concept to articulate and it is easy to get bogged down in muddled notions of pleasure. The Christian notion of joy is a rich resource for thinking about design and use of digital technology, as it draws attention to the idea, and helps to express the idea, of things going well within ourselves and between ourselves, the world, and others, even during difficult circumstances.

Dr Jennifer George is the Head of the Computing Department at Goldsmiths, University of London. Her areas of research and academic practice are in human computer interaction with a focus on digital disability inclusion and accessibility.

Dr Rachel Siow Robertson is an Assistant Professor at the Department of Religion and Philosophy at Hong Kong Baptist University. Her research and teaching interests include philosophical approaches to embodiment, and virtue and formation in the digital world.

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