



Reclaiming Attention: Christianity and HCI

🔗 Alexis Hiniker and Jacob O. Wobbrock, University of Washington

Christianity is the world's most practiced religion. Its followers hold that Jesus of Nazareth was the divine Son of God, who was resurrected from the dead following his crucifixion, thereby fulfilling the Jewish messianic prophecies as foretold in the Hebrew Bible. Christians believe that Jesus was both fully human and fully divine, and that his resurrection demonstrates that the faithful will not perish but will instead enter an eternal life with God after death.

The current wave of human-computer interaction research seeks to support people in living a life of meaning, and billions of people—spanning continents and millennia—have derived great meaning from a Christian faith that they have made their life's foundation. What animates the Christian worldview and causes it to resonate with so many? We examine one possible answer to this question and consider how HCI designers might respond to and support what Christians find meaningful in their faith and life.

Centrally, Christian teaching and practice is deeply preoccupied with human *relationships*. As we describe below,

Christianity: 1) portrays a living God who invites each person into a close relationship with him, 2) calls on all people to cultivate intimate and loving relationships with one another, and 3) extends this relational model to the natural world, charging each person to be a caring steward of God's creation.

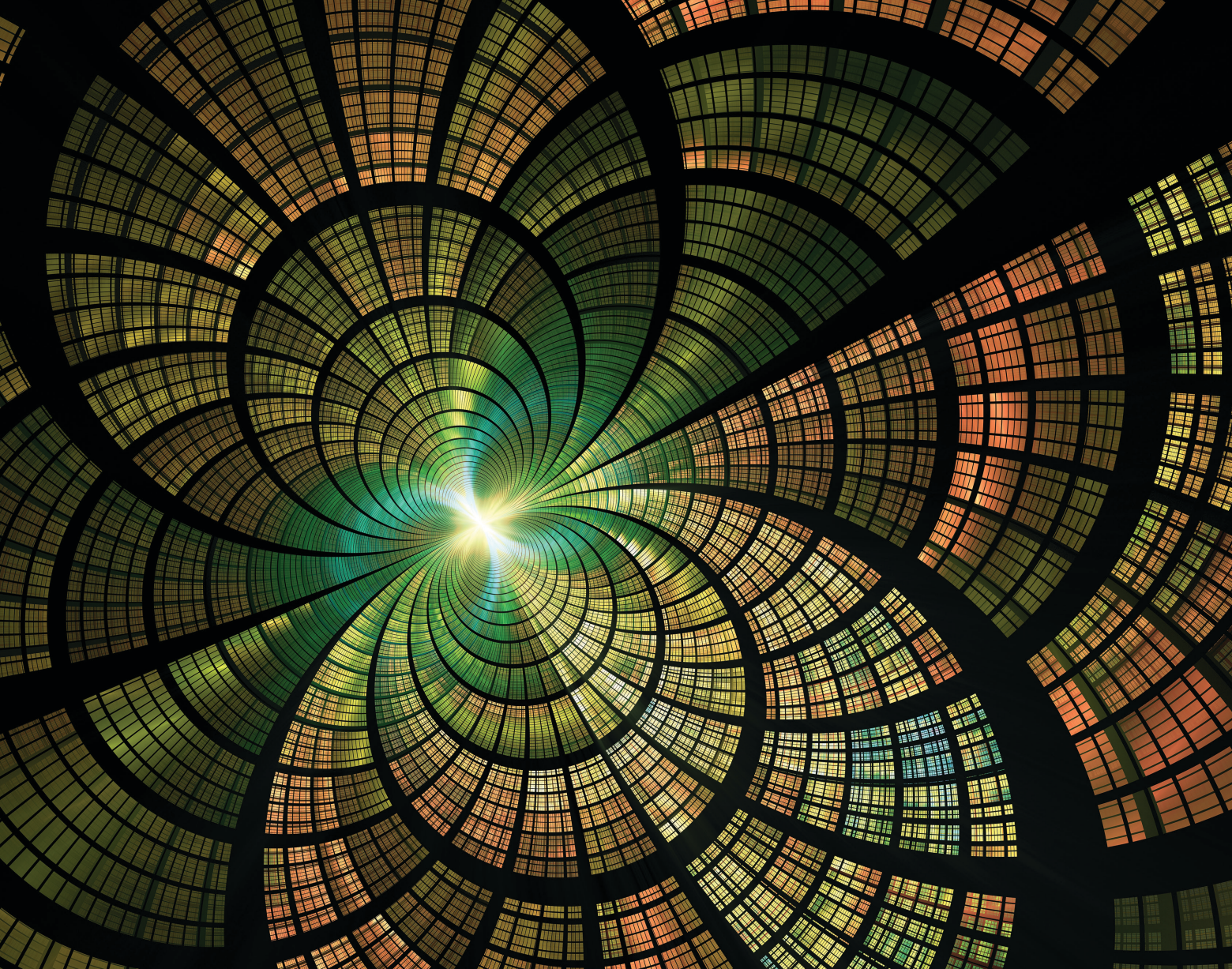
Here, we reflect on ways—both positive and negative—in which the design of technology currently collides with the Christian priority of cultivating these three loving relationships: with God, with others, and with creation (Figure 1). Technology has the potential to support the challenging work of relationship building, and yet too often, it undermines it instead. We consider both possibilities and reflect on how HCI designers might pursue relationally enhancing systems.

THE CHRISTIAN PRIORITIZATION OF RELATIONSHIPS

In relationship with God. A thread that runs throughout Christian doctrine is the idea that God invites each of his

Insights

- Christianity is fundamentally about our relationships with God, others, and creation.
- Many of today's interactive technologies consume our attention and erode, rather than edify, those relationships.
- Rethinking technology design to be relationally edifying requires changing how our attention is monetized.



followers into an intimate, personal relationship with him. Jesus describes God's relationship with each person as epitomizing parent-child attachment and commitment, explaining:

Now suppose one of you fathers is asked by his son for a fish; he will not give him a snake instead of a fish, will he? Or if he is asked for an egg, he will not give him a scorpion, will he? If you then, being evil, know how to give good gifts to your children, how much more will your heavenly Father give the Holy Spirit to those who ask him? (Luke 11:11–13) [1].

As Jesus explains through metaphors and parables, God delights in each new relationship and rejoices each time he is reconciled to one of his children. Jesus describes God as a shepherd who leaves his entire flock to search for one lost sheep (Matt. 18:10–14) and as a father who celebrates the return of his prodigal child rather than rebuke him (Luke 15:11–32). In these and other examples, Jesus emphasizes that God passionately pursues each relationship, knowing each person so intimately that even “the very hairs on your head are numbered” (Luke 12:7).

Christianity teaches that God's followers should respond to his invitation by pursuing this relationship with equal devotion. Scripture and practice both dictate the importance of opening one's heart to God in prayer, and Jesus teaches

that prayer should be humble, private, and personal (Matt. 6:5–14), yielding the kind of heart-to-heart authenticity that is essential to building relationships with other people.

This bidirectional personal relationship with God is arguably the central feature of the Christian faith. The message of the New Testament is the *gospel*, or “good news,” that through the death and resurrection of Jesus Christ, all people can be saved. But what does it mean to be “saved”? The salvation God offers is not merely the overcoming of death—it is the promise of an eternal relationship with God himself.

In relationship with others. Christian teaching also places great emphasis on human-to-human relationships. When asked which moral teaching is most important, Jesus responds:

“Love the Lord your God with all your heart and with all your soul and with all your mind.” This is the first and greatest commandment. And the second is like it: “Love your neighbor as yourself.” All the Law and the Prophets hang on these two commandments (Matt. 22:37–40).

This short passage captures the entire Christian prescription for holy living. First, Jesus once again stresses the importance of building a close and loving relationship with God. Second, he stresses the importance of building close and loving relationships with people.



Figure 1. Three spheres of Christian relationship: with God, with others, and with all of creation.

Throughout the gospels, Jesus both demonstrates and demands a radical commitment to loving others. He consistently shows compassion, inclusion, friendship, and care, especially to those on the margins of society who are least likely to receive love from their community. He pays disproportionate attention to those who have been shunned, and in doing so, demonstrates that no one is beyond God's love. He teaches extending forgiveness to anyone who asks for it (Matt. 18:21–22), illustrating God's extreme commitment to relational repair and reconciliation. And he explains that love should be given universally and unconditionally, saying even to “love your enemies, do good to those who hate you, bless those who curse you, pray for those who abuse you” (Luke 6:27–32).

In relationship with creation. Finally, in viewing God as creator, it is no surprise that Christianity teaches the importance of cultivating a relationship with creation. In the Hebraic account, God creates the universe and all things in it, pronouncing it “good” five times (e.g., Gen. 1:31). The New Testament account further explains that, “in him [Jesus] all things were created: things in heaven and on earth” (Col. 1:16). Scripture further teaches that God's boundless love and desire for relationship extends not only to people but to all of creation. Like people, creation was pronounced good, became corrupted through sin, and will be redeemed by God's love. Put simply, it is *all of creation*, and not humankind alone, that needs redemption and a relationship with God, and God seeks “to reconcile to himself all things, whether things on earth or things in heaven, by making peace through his [Jesus'] blood, shed on the cross” (Col. 1:19–20).

The result of this redemptive act is already foretold; in

the biblical account, creation's destiny is of a restored heaven *and* a new, physical earth (2 Pet. 3:13, Rev. 21:1), with all of creation reconciled to God in everlasting relationship (Rom. 8:19–23, Eph. 1:10). Vitality, Christianity does not permit its adherents to passively await this restoration of creation; God charges people with caring for his creation as it exists today (Gen. 2:15, Lev. 25:1–7), a divine mandate to stewardship. And this stewardship serves a purpose beyond maintenance; scripture teaches that in relating to creation, we relate to the One who made it (Job 12:7–8, Rom. 1:20).

TECHNOLOGY AND RELATIONSHIPS

This relational understanding implicates a clear priority for design: Supporting Christian users in living out their faith requires supporting their relationships with God, with others, and with creation. In moments, popular technologies live up to this ideal; for example, people leverage devices and interactive systems to collaborate, meet new people, maintain intimacy, and deepen their connections to the natural world.

But too often, digital experiences instead suppress our inclination to invest in relationships, and they undermine our connections to God, to one another, and to creation. This trend is not arbitrary or accidental; it is, in part, the result of the *attention economy*, the common online business model of monetizing human attention through advertising. Designers creating products with the goal of serving advertisements are incentivized to capture users' attention as often as possible and to hold it for as long as possible, and a design agenda to direct human attention toward advertisements is inherently at odds with the Christian agenda of directing human attention toward purposive relationships. A Christian design perspective demands a shift from designing for engagement to designing for the radical prioritization of relationships. Here, we tour examples of current technologies' impact on each of the three relational spheres described above.

Technology and our relationship with God. Tending a relationship with God through prayer, worship, and other activities requires specific and deliberate behavioral choices, including pausing, rejoicing, yielding, and asking [2]. Technology is interwoven into modern life in a way that detracts from each of these behaviors, as the constant intrusion of digital notifications fragments attention, undermines contemplative activities like prayer, and suppresses our instinct to pause. The sensationalized headlines, negativity, and clickbait that drive engagement on interactive news platforms reduce optimism and joy, and common social media usage patterns promote anxiety and psychological distress that impede people's ability to surrender to God and trust in his providence.

And yet, technology also has the potential to support people in building their relationships with God. Apps can increase users' mindfulness and awareness of the present moment, and intentionally designed systems can support people in self-soothing and grappling with their emotions—regulatory processes that are central to yielding to God. However, the overwhelming majority of American Christians disagree with the statement that technology has improved their relationship with God [3], suggesting this potential remains untapped.

Technology and our relationships with others. Separately, people report widespread frustration with digital experiences

that undermine their relationships with other people. Prior work shows that interruptions from technology during moments of interpersonal connection reduce relationship satisfaction and are causally linked to anxiety and depression [4]. Prior work also shows that inflammatory content online increases profitability but also hostility among users, and that interactive systems can encourage trolling, reduce empathy, and reward shaming. Experimental work has causally linked social media browsing to increases in loneliness [5], and gaming experiences that simulate violence have led to increases in the tendency to assume hostile intentions in others [6].

And yet, people also say they regularly use digital technology to *grow* their relationships with other people. Parents and children bond by gaming together, online support groups facilitate meaningful interpersonal connections, and romantic partners leverage communication technologies to remain close over geographic distance. This differentiated impact is not happenstance, as the design of a system and its affordances play a critical role in determining whether an experience is relationally enhancing or relationally destructive. For example, multitouch support, symmetric interfaces, and user-dictated timing all increase children's likelihood of responding to the people around them when using devices and inviting others to share their digital experiences [7]. The design of social platforms can intentionally nudge users toward or away from critical reflection [8], and the way a platform organizes posts and constructs audiences influences people's ability to discuss controversial topics constructively [9]. Thus, the decisions HCI designers make influence whether users live up to the commandment of loving their neighbor.

Technology and our relationship with creation. Finally, humans have always created technologies to mediate their relationship with the natural world and to enable them to exert power over their environment by altering landscapes, destroying habitats, controlling waterways, and extracting the Earth's resources. These human-centric activities too often reflect an exploitative, rather than stewarding, relationship to creation, and post-Industrial Revolution advances have exploded the scope and scale of technology-driven environmental degradation.

Work in HCI has brought sustainability to the fore, showing that technology need not be used as a tool of exploitation and can instead support people in relating to creation as stewards. Other work demonstrates that technology can be used to increase people's appreciation of and investment in the natural world [10]. These prototypes demonstrate that technology has the power to support people in cultivating loving relationships with creation but only when it is intentionally designed to do so.

People's relationship to creation provides the larger context in which they carry out their relationships with God and other people, making it essential that technologies support people in relating to nature with care. We cannot love our neighbors as ourselves while ruining the environment in which they live. We cannot love future generations by leaving them a degraded creation worth less than God intended. We must become conscious of how our technologies, whether by their manufacture or use, disparage creation and our relationship to God through it.

A RELATIONSHIP-CENTRIC DESIGN AGENDA

All loving relationships—whether with God, other people, or creation—are built through investments of attention. Relating to another requires looking outward, making the relational partner the focus of attention, and attuning to their current state. *Attunement*, the process of indirectly feeling another's experiences, is essential to strong relationships. A relationship-centric HCI design agenda must consider the effect of each design decision on the user's ability to attune to God, others, and creation. Doing so requires examining how interfaces direct the user's attention, affect their ability and inclination to engage in perspective taking, and influence their willingness to accept, experience, and listen without judgment to the distress of another.

Building and maintaining relationships also requires the emotional responsiveness and availability that leads to *secure attachment*. Technologies that foster secure attachments will support users in selective self-disclosure, giving and receiving social support, expressing emotions, and demonstrating presence. Maintaining secure attachments requires repairing relational breeches when they occur and developing an intimate space for relational partners to share.

IN DIALOGUE WITH OUR COMPANION ARTICLES

All four pieces in this *Interactions* Dialogue wrestle with issues of attention and relationship, although they might not use those terms. Kentaro Toyama (page 36) calls us to redirect our attention internally, advocating for increased self-reflection and contemplation with a societal “inward turn.” Jessica Hammer and Samantha Reig (page 30) urge us to complement the current rights-based view of online participation with an obligations-based view that prioritizes our responsibility to treat others well. Joyojeet Pal (page 46) highlights the potential for religion to be subverted into a relationally corrosive force that encourages tribalism, exclusion, and polarization. And he calls out the power of social media to peddle corrupted faith at scale.

Toyama traces technology's goal of focusing user attention on the external to the 17th- and 18th-century European Enlightenment and the values that motivated it. He explains that the Enlightenment brought a revolutionary shift in which society at large came to value both examining the external world from a positivist standpoint and articulating a single objective reality. Toyama argues that in making the external world the object of our collective attention, humanity deprioritized our individual internal worlds, moving away from practices that emphasize personal growth and the cultivation of virtue.

Toyama's frame foregrounds the attention-economy practice of drawing users' attention away from the internal and toward the

A Christian design perspective demands a shift from designing for engagement to designing for the radical prioritization of relationships.

external (e.g., article content, the likes one receives for a post, goods one might purchase through an e-commerce platform, the opinions of other users, the thrill of an online game). In Toyama’s model, the internal practices that the world’s religions universally promote, such as prayer and commitment to self-improvement, are neglected in favor of external practices that enhance human welfare, such as seeking material goods and optimizing for the well-being of the majority (Figure 2).

The relational framing we use complements and extends Toyama’s model. Like Toyama, we consider where technology directs human attention. However, by using relational impact as our organizing principle, we further subdivide internal and external attention into practices that are relationally enhancing or relationally corrosive (Figure 3).

We agree with Toyama that technology’s tendency to suppress introspection is deeply problematic, because in the Christian perspective, inward focus is the mechanism by which people cultivate a relationship with God. However, loving God is only one of the two great commandments; Christians are also tasked with making *others* the focus of their loving attention. Doing so demands an “outward turn” to complement the inward one. This inward-outward coupling is a recurring theme throughout Jesus’s teachings and practice. He calls his disciples to be with him but then sends them out again to every town and village (Matt. 10:1–20). He takes us and heals us but then gives us away to do likewise for others (Mark 12:31–33).

Like our companion authors, we see: 1) attention as

Internal	External
Self-reflection	Materialism
Communion with the divine	Consequentialism
Cultivation of virtue	Exploitation of the natural world

Figure 2. Examples of internal and external practices that might surface through Toyama’s framing.

	Internal	External
Relationally Enhancing	Self-reflection	Attunement
	Communion with the divine	Altruism
	Cultivation of virtue	Compassion
		Curiosity
Relationally Corrosive	Rumination	Materialism
	Vanity	Consequentialism
	Self-absorption	Exploitation of the natural world

Figure 3. Expansion of Toyama’s model to further subdivide internal and external practices into those that are relationally enhancing and those that are relationally corrosive. The cells shown in red list examples of new considerations not surfaced by Toyama’s model—namely, the ways in which internal focus can erode relationships (bottom-left quadrant) and the ways in which external focus can enhance relationships (top-right quadrant).

an invaluable resource too precious to be monetized, and 2) our obligations to relationships as central to a life well lived and a fundamental basis for moral behavior. Current societal perception of technology reflects widespread frustration with its distracting and inflammatory influence on our relationships. This is unsurprising, given that *the attention economy and the work of relationship building share the same currency and compete for the same scarce resource of human attention*. As long as HCI designers have other plans for users’ attention, those users will be compromised in their ability to invest in relationships. But decades of HCI innovation show that it does not have to be this way. Designers have the power to create systems that edify, rather than erode, our relationships, which Christians maintain are the best part of this life and a holy glimpse of the life to come.

ENDNOTES

1. All Bible references taken from the New International Version.
2. Greig, P. *How to Pray: A Simple Guide for Normal People*. NavPress, 2019.
3. Froese, P., Uecker, J., Vaughan, K., Park, J., Davidson, J., Whitehead, A., and Thomson, B. American values, mental health, and using technology in the age of Trump: Findings from the Baylor Religion Survey, wave 5. Baylor University, 2017.
4. McDaniel, B.T. and Coyne, S.M. “Technoference”: The interference of technology in couple relationships and implications for women’s personal and relational well-being. *Psychology of Popular Media Culture* 5, 1 (2016), 85–98; <https://doi.org/10.1037/ppm0000065>
5. Hunt, M.G., Marx, R., Lipson, C., and Young, J. No more FOMO: Limiting social media decreases loneliness and depression. *Journal of Social and Clinical Psychology* 37, 10 (2018), 751–768.
6. Gentile, D.A., Li, D., Khoo, A., Prot, S., and Anderson, C.A. Mediators and moderators of long-term effects of violent video games on aggressive behavior: Practice, thinking, and action. *JAMA Pediatrics* 168, 5 (2014), 450–457.
7. Hiniker, A., Lee, B., Kientz, J.A., and Radesky, J.S. Let’s play! Digital and analog play between preschoolers and parents. *Proc. of the 2018 CHI Conference on Human Factors in Computing Systems*. ACM, New York, 2018, Paper 659, 1–13; <https://doi.org/10.1145/3173574.3174233>
8. Kriplean, T., Morgan, J., Freelon, D., Borning, A., and Bennett, L. Supporting reflective public thought with considerit. *Proc. of the ACM 2012 Conference on Computer Supported Cooperative Work*. ACM, New York, 2012, 265–274.
9. Baughan, A. et al. Someone is wrong on the Internet: Having hard conversations in online spaces. *Proc. of the ACM on Human-Computer Interaction* 5, CSCW1 (2012), 1–22.
10. Kavas, S. et al. NatureCollections: Can a mobile application trigger children’s interest in nature? *Proc. of CSEDU 2020*. Scitepress, 2020, 579–592.

✎ **Alexis Hiniker** is an assistant professor in the University of Washington Information School, where she studies the effect of mobile and ubiquitous systems on meaningful human experiences. She holds a bachelor’s degree in computer science from Harvard, a master’s degree in learning, design, and technology from Stanford, and a Ph.D. in human-centered design and engineering from the University of Washington.
→ alexisr@uw.edu

✎ **Jacob O. Wobbrock** is a professor in the University of Washington Information School and an adjunct professor in computer science and engineering at UW. He is a member of the CHI Academy. His research focuses on input and interaction, notably the EdgeWrite alphabet, the first gesture set created via a user-defined gesture methodology.
→ wobbrock@uw.edu