BRILL

JOURNAL OF YOUTH AND THEOLOGY 16 (2017) 117-143

JYT
brill.com/jyt

Who's Shaping Whom? Digital Disruption in the Spiritual Lives of Post-familial Emerging Adults

Samuel Baker
Professor of Christian Ministries and Chair of the Christian Ministries department, Corban University, Salem, Oregon, USA
sbaker@corban.edu

Abstract

Technology has always interrupted and reshaped culture. Digital technology is no different, of course, and—predictably—it continues to reshape a variety of frameworks: individual, social, and ecclesiastical. This paper investigates how late adolescent, emerging adults engage with new media, paying special attention to how digital technology influences their neurological, personal, and spiritual vitalities. Youth ministry practitioners, it will be argued, must be far more attentive to the conforming and transforming properties of digital engagement, which more profoundly impact the spiritual lives of late adolescents. A viable theology of technology is promoted, and suggestions for discipleship and stewardship praxis are encouraged.

Keywords

technology – new media – emerging adult – networked individualism – post-familial – theology of technology – adolescent brain

Introduction

In 2000, Jeffrey Arnett noted, "Sweeping demographic shifts have taken place over the past half century that have made the late teens and early twenties not

* The author has over twenty years of pastoral ministry experience, and is profoundly interested in the study and research of adolescent and emerging adult faith development. His scholarly interests include investigation in the areas of spiritual formation, practical theology, technology and faith, ministry praxis, and Christian leadership.

 | DOI 10.1163/24055093-01602003

simply a brief period of transition into adult roles but a distinct period of the life course, characterised by change and exploration of *possible life direction*."[1] Accepting Arnett's terms, researchers and practitioners have set out to better understand the "life directions" of this unique period of adolescent development, or what is now commonly referred to as "emerging adulthood." We might best describe this period as a time of great challenge with respect to choice of vocation, lifestyle habits, interpersonal relationships, and decision-making, and we might characterise "young adults at this stage" as "*transitional*, *idling*, *flexible*, *trying* or *tinkering*."[2] Setran and Keisling agree: "We see emerging adulthood as a time of formidable challenge and yet great opportunity."[3] Engagement with new media, no doubt, is a defining feature of emerging adulthood, and without a rich concept of how technology functions in this period of identity development, we simply cannot see the whole picture. To such an end, this paper poses three related questions, all in an effort to understand how digital technology is shaping—and might better shape—the spiritual lives of emerging adults.

First, how does technology—especially social media in all its various forms—influence the lives of teens and emerging adults? Research into the technology habits of teens and emerging adults reveals just how profoundly influential technology is in the lives of American youth. The notion of "networked individualism"—a predominantly digital social construction of oneself—only underscores a particularly problematic trend in post-familial relationships, whereby an over-reliance on gadget-mediated relationships strains interpersonal presence. As Gardner and Davis observe, "While parents appear generally optimistic about the role of technology in their family life, there seems to be a tipping point …. This state of affairs resembles the so-called *post-familial* family, in which families spend more time interacting with their gadgets than with each other."[4] Digitally manufactured impediments, then, work through the early stages of adolescence well into emerging adulthood, generally influencing other dynamics of continued development, most notably, and of

1 Jeffery Arnett, "Emerging Adulthood: A Theory of Development from the Late Teens through the Twenties," *American Psychologist*, Vol. 55, No. 5, (2000), 469. Emphases added.

2 Richard Dunn and Jana Sundene, *Shaping the Journey of Emerging Adults: Life-Giving Rhythms for Spiritual Transformation* (Grand Rapids, MI: InterVarsity Press, 2012), 26. Emphases in original.

3 David Setran and Chris Keisling, *Spiritual Formation in Emerging Adulthood: A Practical Theology for College and Young Adult Ministry* (Grand Rapids, MI: Baker Academic, 2013), 5.

4 Howard Gardner and Katie Davis, *The App Generation: How Today's Youth Navigate Identity, Intimacy, and Imagination in a Digital World* (New Haven, CT: Yale University Press, 2013), 107. Emphases added.

significant concern, the effects of technology in the developing brain of the adolescent.

What effect, then, is digital engagement having on the brain of the emerging adult? This is the second question, to which Challies has responded with a memorable quip: "We are transformed from people who *respond* to the beep to people *of* the beep."[5] The constant interruption of smart phone bleeps and buzzes are producing Pavlovian-like responses as emerging adults move throughout cultural and relational landscapes. As a result, the extent to which the beep distracts and disrupts the developing brain of the emerging adult further demonstrates technology's shaping effects. The specific examples of the brain's response to patterns of addiction and sleeplessness are two areas of addressed concern. In addition, an exemplar focusing on reading from digital displays—versus traditional print media—is examined. The "print v. digital" exemplar has special bearing on both brain development and ecclesiastical contexts, whereby the *people* of God gather to read and respond to the *Word* of God, for mutual teaching, rebuking, correcting and training in righteousness (2 Tim. 3:16–17).[6] In lieu of both the cultural and neural-individual shaping effects of technology, a final question arises concerning a suitable theological response.

What is an appropriate theological response to the shaping effects of technology in the lives of emerging adults? There is a tendency for some ministry practitioners to hold dystopian views of digital engagement, lambasting technology in all its forms as the "villain" of all things sacred. Reactionary luddites succumb to "strict separation, keeping themselves from these technologies and seeing everything digital as a dangerous enemy."[7] Techno-utopians, however, have acclimatised to overindulgences, whereby any, and all, forms of engagement with technology are heralded as the new emancipating liberator. The utopian counter-part, as Zirschky notes, sees that "the latest technological innovations and social media hold the key to more effective ministry with young people."[8] These opposing views are evaluated according to the biblical concepts of *conforming* and *transforming*; the aim, in particular, is to propose

5 Tim Challies, *The Next Story: Faith, Friends, Family, and the Digital Word* (Grand Rapids, MI: Zondervan, 2015), 116. Emphases in original.

6 2 Timothy 3:16–17 – "[16] All Scripture is God-breathed and is useful for teaching, rebuking, correcting and training in righteousness, [17] so that the servant of God may be thoroughly equipped for every good work" (NIV).

7 Challies, *The Next Story*, 16.

8 Andrew Zirschky, *Beyond the Screen: Youth Ministry for the Connected but Alone Generation* (Nashville, TN: Abingdon Press, 2015) Kindle Edition, Loc. 148.

a middle-ground, whereby digital engagement of emerging adults (EAs) is viewed within a biblical construct of networked religiosity and disciplined stewardship.

Those who work with emerging adults are encouraged to develop a theology of technology if they are to be effective in providing holistic guidance. An integrative approach to a theology of technology should also demonstrate thoughtful interaction with Scripture and theological ideologies against the backdrop of pressing cultural concerns. As Turkle reminds us, "We have to love our technology enough to describe it accurately. And we have to love ourselves enough to confront technology's true effects on us."[9] Describing any new technology's lure, in light of conforming and transforming vernacular, is helpful both theologically and pragmatically. As Laytham maintains:

> Rather, our response to the powers is dialectical: we resist their seductive rebellions while respecting their identity as good creations; we refuse their pretension to ultimacy while affirming their subordinate role in Christ's triumph; we reject the temptation to hope in their power for good while patiently hoping for their renewal.[10]

Thus, those who work with EAs in various ministry contexts must be equipped with thoughtful theological reflection and biblical underpinnings related to current technological concerns. Additionally, moving toward a strategy of digital stewardship aids in guiding emerging adults, who are fascinated with digital technology's enticements and promises, to appropriate responses and postures for continued spiritual growth.

The Shaping of American Youth Culture: We Get it ... EAs are into Technology

> Even while these people were worshiping the LORD, they were serving their idols. To this day their children and grandchildren continue to do as their ancestors did.
>
> 2 KINGS 17:41, NIV

9 Sherry Turkle, *Alone Together: Why We Expect More from Technology and Less from Each Other* (New York, NY: Basic Books, 2011), 243.

10 Brent Laytham, *iPod, YouTube, WiiPlay: Theological Engagements with Entertainment* (Eugene, OR: Cascade Books, 2012), 27.

Much attention is given to the role technology, the internet, and social media has played in the developmental, social, familial, educational, and spiritual lives of adolescents. Try waking the average American teenager in the morning and the odds are you will find a cell phone tucked under their pillow—the last thing they touched before falling asleep and the first thing they reach for when opening their eyes. The overabundance of research in the area of engagement with digital technology in the lives of early, middle, and late adolescents reveals the wide influence new media has in the lives of America's youth. How does technology—especially social media in all its various forms—influence the lives of teens and emerging adults? The following samples demonstrate tested conclusions surrounding teens and their engagement with technology.

General Engagements with Technology

In 2010, the much anticipated Kaiser Family Foundation report revealed young people have been increasing the amount of time they spend consuming digital media at a steadily growing rate.[11] In grand-sum, America's youth increased media *exposure* by 2¼ hours and *usage* by 1¼ hours per day over a five-year period. Use of every type of media has increased over the past decade, with the exception of reading. The increases ranged from twenty-four minutes a day for video games to twenty-seven minutes a day for computers, thirty-eight minutes for TV content, and forty-seven minutes a day for music and other audio. During this same period, time spent reading dropped from forty-three to thirty-eight minutes a day.[12] The television content adolescents once consumed only by sitting in front of a TV at an appointed hour is now available whenever and wherever they want: on TV sets in the bedroom, laptops, mobile phones, and iPods or tablets. Twenty percent of media consumption occurs on mobile devices—cell phones, iPods, or handheld video game players. Moreover, almost another hour consists of "old" content—TV or music—delivered through new pathways on a computer (e.g., Hulu, Crackle, Megabox, ShowBox, Flipps, TV, iTunes, Google Play Movies & TV, etc.).[13]

In other areas of digital encounter, the National Center for Biotechnology Information—measuring "attention span" related to internet use—reported the average attention span of Americans has dropped from 12 seconds in 2000,

11 Victoria Rideout, Ulla Foehr, and Donald Roberts, *Generation M2: Media in the Lives of 8- to 18-Year-Olds* (Menlo Park, CA: The Kaiser Family Foundation, 2010), 2.

12 Rideout, et al. *Generation M2,* 2.

13 Rideout, et al. *Generation M2,* 2.

to 8.25 seconds in 2015.[14] In just one minute on the internet, "YouTube users upload 300 hours of new video …. Instagram users like 1,736,111 photos, Snapchat users share 284,722 snaps, and Pinterest sees 9,722 users Pin images."[15] Moreover, the sovereign of them all, Facebook, by far leads the way in social medial consumption.[16] As Rainie and Wellman note, "Facebook has become so essential and appealing to networked individuals that it is consuming ever-increasing amounts of time."[17]

More recently, a Pew Internet Research study reported two-thirds of Americans engage with social media, up seven percent from when Pew Research Center began tracking social media usage in 2005.[18] They also reported emerging adults are still the most likely to engage in social media usage.[19] However, the current trend among emerging adults is leveling off, while among older age groups (in particular those who are sixty-five and older) is on the increase. Research conducted by groups like *Highlights* magazine (a popular periodical focusing on younger children) and the *Girl Scouts of America* reveal a profound effect of social media in the lives of early children and adolescents, as well.[20]

---

14 Harald Weinreich, et al, "Not Quite the Average: An Empirical Study of Web Use," in the *ACM Transactions on the Web*, vol. 2, no. 1 (February 2008), article #5. "Attention span," as defined by the researchers, "is the amount of concentrated time on a task without becoming distracted. Most educators and psychologists agree that the ability to focus attention on a task is crucial for the achievement of one's goals. It's no surprise attention spans have been decreasing over the past decade with the increase in external stimulation."

15 Irfan Ahmad, "Facebook, Twitter, YouTube, Pinterest, Instagram: What Happens in One Minute on the Internet - #infographic," *Digital Information World.com*, August 2015 (Accessed, August 15, 2015), http://www.digitalinformationworld.com/2015/08/infographic-data-never-sleeps.html?m=1.

16 For a fuller listing of Facebook stats, see: Zephoria Digital Marketing, "The Top 20 Valuable Facebook Statistics." *Zephoria Digital Marketing*, Updated July, 2016. (Accessed August 1, 2016), https://zephoria.com/top-15-valuable-facebook-statistics/.

17 Lee Rainie and Barry Wellman, *Networked: The New Social Operating System* (Cambridge, MA: The MIT Press, 2012), 140.

18 Andrew Perrin, "Social Networking Usage: 2005–2015." *Pew Research Center*, October 2015, (Accessed: February 15, 2016), http://www.pewinternet.org/2015/10/08/2015/Social-Networking-Usage-2005-2015/.

19 Perrin, "Social Networking," 3.

20 See: Girl Scout Research Institute, "Who's That Girl? Image and Social Media." *Girlscout.Org,* 2010, (Accessed: September 5, 2015), http://www.girlscouts.org/content/dam/girlscouts-gsusa/forms-and-documents/about-girl-scouts/research/gsri_social_media_fact_sheet.pdf. And, Michele Borba, "Highlights Magazine Releases 2014 State of the Kid Survey." *Entertainment Close-up* 13 Oct. 2014. *General OneFile*. Web. 20 Jan. 2015.

The results are in. An explosion in mobile and online media innovation has fueled a feeding frenzy of digital use. The story of digital media—predominantly in the lives of young people—is a story of technology facilitating increased consumption. Mobile and online media revolutions have arrived in the lives—and pockets—of American youth. The effects of such engagement have resulted both in networked individualism and in post-familial relationships, most notably affecting interpersonal relationships between emerging adults and family members.

Networked Individualism and Post-familial Relationships

"Networked individuals" focus the majority of their time and attention not on family, work, neighbors, or social groups, but rather on calculated manufacturing of positively socially-constructed perceptions of themselves.[21] The impact of networked individualism, and its effects on interpersonal relationships, is increasingly evident within the multi-faceted dynamics of the postmodern family. As Gardner and Davis observe, "Among the relationships at risk of disruption by today's media technologies, the family may be particularly vulnerable."[22] Such vulnerabilities are exacerbated as adolescents mediate relationships through digital networks—as opposed to face-to-face exchanges—with peers and their own family members. Teens learn early on the hard work of developing and maintaining sustained relational engagements with parents and peers can be easily truncated by simply shooting off a text or instant message. Thus, a new term has emerged describing the American family as "post-familial;" it is a movement beyond traditional and established values of healthy, interpersonal family interaction, accommodating instead to self-generated types of mediated presence through digital forms.

While evidence does exist supporting positive notions of families being more connected than previous generations, a mounting reality remains that families spend more time connected to their gadgets than with one another.[23] Turkle complements this opinion by adding, "Their [family] members are alone together, each in their own rooms, each on a networked computer of mobile device …. We defend connectivity as a way to be close, even as we effectively hide from each other."[24] Consequently, as EAs move through the later stages of adolescence, keen awareness and attention to the lingering effects of both networked individualism and post-familial fallout remain a top priority.

21 Raine and Wellman, *Networked*, 6.

22 Gardner and Davis, *The App Generation*, 107.

23 Gardner and Davis, *The App Generation*, 107.

24 Turkle, *Alone Together*, 281.

And as these dynamics unfold, youth ministers in particular have tended to respond in seemingly neutral-attentive stances to the personal and spiritual needs of emerging adults.

Youth Ministry's Conventional Response

The abundance of youth ministry research and praxis studies related to technology's influence on individuals, families, and the church have tended to focus on younger children and teens, most notably those in the early to middle stages of adolescent development. The vast amount of youth ministry literature tends to be geared specifically toward junior and senior high ministry in the local church in the United States.[25] With the growth of networked individualism and post-familial influences across the entire span of adolescence, there remains equitable need to give more attention to the digitally-shaping actualities confronting emerging adults. Whether youth ministry practitioners advocate pessimistic or optimistic responses may not be the weightier concern. The fact remains, "emerging adult spiritual formation has been largely neglected as a topic of purposeful inquiry."[26] The need persists for a specific focus in advocating for theological and praxis-directed responses to emerging adult's engagement with digital technologies and their shaping effects.

In the interim, how are emerging adults responding? Religious orientation is in decline for this age demographic.[27] And as the decline continues, emerging adults "use online interactions with a greater sensitivity to how they present themselves to the world at large … the quality and nature of offline relationship are mirrored in the digital ones."[28] With digital media being incorporated into daily living, a clear integration of online and offline postures to faith are emerging. "Multisite reality," where individuals integrate online and offline patterns of religious behavior, is fast becoming the new spiritual norm

25 It should be noted, however, positive movement in the direction of including emerging adults in youth ministry practice is emerging. At the time of this paper the Fuller Youth Institute has released research, which includes emerging adulthood under the overall umbrella of youth ministry. See: Kara Powell, Jake Mulder, and Brad Griffin, *Growing Young: Six Essential Strategies to Help Young People Discover and Love Your Church* (Grand Rapids, MI: Baker Books, 2016).

26 Setran and Keisling, *Spiritual Formation*, 6.

27 See: JM Twenge, et al, "Generational and Time Period Difference in American Adolescents' Religious Orientation 1966–2014," *PLoS ONE*, Vol. 10, No. 5, 2015: 1–17. The study uses 11.2 million datasets to analyze differences in religious orientation between Millennials, boomer, and Gen X demographics.

28 Bradley Howell, in Chap Clark, Ed., *Adoptive Youth ministry: Integrating Emerging Generations into the Family of Faith* (Grand Rapids, MI: Baker Academic, 2016), 60.

for many EAs.[29] Youth ministries, in many cases, have taken a neutral position to the influence of technology in EA spiritual formation, neglecting postures for understanding complicated issues involved with networked individualism and multisite realities.

Consequently, intentional connections between young adults, their family members, and the church at large has reached a level of a "spiritual global pandemic in the first generation of twenty-first century adults."[30] At a stage of life when individuals are moving toward grander depths of identity and spiritual formation—and moving farther away from tangibly-present family connections to self-developing individuation—this lack of attention needs to be attended to within ministry contexts. In this light, beginning with an understanding of technology's effect on the individual aids in moving toward developing a response to larger issues. In this respect, examples of digital influences on the developing adolescent brain are considered.

The Shaping of the Individual: This is an EA's Brain on Social Media

> The mind governed by the flesh is death, but the mind governed by the Spirit is life and peace.
>
> ROMANS 8:6, NIV

Nicolas Carr maintained in 2010, "The brain is not the machine we once thought it to be .... Extensive, perpetual plasticity has been documented in healthy, normally functioning nervous systems, leading neuroscientists to conclude that our brains are always in flux, adapting to even small shifts in our circumstances and behavior."[31] While utopian detractors have argued ideas such as these are conjectural, "unscientific," and anecdotally asserted, current study in adolescent neurophysiology concurs with Carr's line of reasoning more than dissenters may have imagined. Adaptation to small shifts in circumstances and behaviour are now evidenced in the brain's relationship to digital encounters, whether on a mobile device, computer, tablet, or some other digital tool. Within the discipline of neuroscience, current thought maintains that while technology has "allowed us to be anywhere anytime, conversation with other

29 Heidi Campbell and Stephen Garner, *Networked Theology: Negotiating Faith in Digital Culture* (Grand Rapids, MI: Baker Academic, 2016), 75.

30 Dunn and Sundene, *Shaping the Journey*, 20.

31 Nicholas Carr, *The Shallows: What the Internet Is Doing to Our Brains* (New York, NY: W.W. Norton & Company, 2010), Kindle Edition, Loc. 517–551.

people was a big part of how we satisfied our brain's need for stimulation."[32] But now, "through our devices, our brains are offered a continuous and endlessly diverting menu that requires less work."[33] The evidence is clear: brain development *is* affected by digital interaction.

However, dystopian enthusiasts need not jump on Carr's bandwagon too quickly, as research continues to associate positive outcomes with teens who are engaged in digital environments, namely in such areas as critical thinking abilities, social skill acquisition, constructive peer-to-peer relational dynamics, problem solving capacities, and a host of other affirming developmental exigencies.[34] Zirschky is right when he says, "research shows that teenagers primarily use social media to maintain persistent social presence with those who are important to them."[35] Many EAs, at the end of the adolescent spectrum, are engaged in a continued processes of maintaining an online and off-line identity, which is harmonious with face-to-face engagements with peers, potential marriage partners, co-workers, distant family members, and those with whom they regularly attend church. This multisite reality has already been noted above.[36] What effect, then, is digital engagement uniquely having on the brain of the emerging adult?

Reconsidering Brain Development in Digitally Engaged EAs

When it comes to the brain, EAs are well poised to meet the complex capacities associated for exploration and individuation due to the growth of the cerebral

32 Sherry Turkle, *Reclaiming Conversation: The Power of Talk in a Digital Age* (New York, NY: Penguin Publishing, 2015), 39–40.

33 Turkle, *Reclaiming Conversation*, 39–40.

34 See for example: Nancy Baym, *Personal Connections in the Digital Age* (Malden, MA: Polity Press, 2010). Danah, Boyd, *It's Complicated: The Social Lives of Networked Teens* (New Haven, NJ: Yale University Press, 2014). Leigh Doster, "Millennial Teens Design and Redesign Themselves in Online Social Networks." *Journal of Consumer Behaviour*: Vol. 12, (2013), 267–279. Clive Thompson, *Smarter than You Think: How Technology is Changing Our Minds for the Better* (New York, NY: The Penguin Press, 2013). Jess Zimmerman, "The Internet is Fertile Ground for the Mosaic of Allegiances out of Which Teens Build Identity." *The Guardian*. January 12, (2015). http://www.theguardian.com/commentisfree/2015/jan/12/internet-mosaic-teens-build-identity.

35 Zirschky, *Beyond the Screen*, Loc. 235–237.

36 For further clarification, Campbell and Garner say of multisite reality, "This expression of multisite reality encourages the view that because the online environment is an extension of the offline religious social world, the internet should be infused with similar motivations and practices." Campbell and Garner, *Networked Theology*, 76.

cortex and its remarkable plasticity.[37] "Plasticity," the brain's ability to mold itself, is predisposed in the developing brain to "thinking, planning, learning, acting—all influence the brain's physical structure and functional organisation, according to the theory of neuroplasticity."[38] Developmental theorists and brain researchers both affirm "the teenage brain is almost like a brand-new Ferrari: it's primed and pumped, but it hasn't been road tested yet … all revved up but doesn't quite know where to go."[39] There is mounting concern that over-activity in the developing brain is more serious and problematic for adolescents—and EAs—than for adults. Nowhere is this more evident than in digital encounters with mobile technology and internet use.

Frances Jensen, a contemporary neuroscientist, observes how "Today's teenagers and twenty-somethings make up the first generation of young people exposed to such a breathtaking number of electronic distractions, and they are therefore susceptible to a whole new host of influences."[40] In essence, it takes much longer for the adolescent and emerging adult brain to figure out when *not* to do something. An extended example of this relates to "multi-tasking"—well known by now to an overwhelming majority of those in the scientific community as a misleading myth. Neuroscience is quick to dismantle multi-tasking aptitudes, maintaining, "Multitasking is not only a myth but a dangerous one, especially when it comes to the teenage brain."[41] Turkle underscores the multi-tasking myth by asserting: "When we think we are multitasking, our brains are actually moving quickly from one thing to the next, and our performance degrades for each new task we add to the mix."[42] Thus, the ability for emerging adults to focus attention on sustained tasks continues to be a problematic as they participate in on-going digital activities.

Continued exploration into the nuances of neuro-plasticity, cerebral cortex development, and associated brain growth remain top priorities for investigation. Brain growth, at its apex, is in a constant state of change during early, middle, and late adolescence. The processes involved in neurophysiological progression are not fully matured once an emerging adult moves into full adulthood. Concerned developmental theorists, brain experts, social psychologists,

37 Frances Jensen with Amy Nutt, *The Teenage Brain: A Neuroscientist's Survival Guide to Raising Adolescents and Young Adults* (New York, NY: Harper Collins, 2015), 23. Turkle notes: "… the brain is plastic—it is constantly in flux over a lifetime—so it 'rewires' itself depending on how attention is allocated." See, Turkle, *Reclaiming Conversation*, 221.

38 Jensen and Nutt, *The Teenage Brain,* 69.

39 Jensen and Nutt, *The Teenage Brain,* 26–27.

40 Jensen and Nutt, *The Teenage Brain,* 206.

41 Jensen and Nutt, *The Teenage Brain,* 41.

42 Turkle, *Reclaiming Conversation*, 213.

educators, and youth workers contend that the EA years continue to be a period of great vulnerability for brain development, different, in many cases, from earlier stages of development. As Jensen maintains, "It's important to remember that even though their brains are learning at peak efficiency, much else is inefficient, including attention, self-discipline, task completion, and emotions."[43] Similarly, research also corroborates current developmental concerns within emerging adulthood by acknowledging both theoretical perspectives and empirical apprehensions related to recent and rapid increases of digital influences on multiple aspects of daily life, particularly those of young adults.[44] Two such areas where perspectives and empirical methods are much clearer have to do with addictive behaviors and sleeplessness associated with digital overuse in adolescence and emerging adulthood.

Addiction and Sleeplessness

Addiction to the internet and social media is a fast-growing concern, especially within emerging adulthood. Instagram, Snapchat, Tinder, Girls Around Me, Creepy, Situationist, and other social media apps are considered by many as "gateway" apps to behaviors associated with pornography addiction and other related addictive behaviors.[45] Facebook underscores narcissistic tendencies, as do Instragram, Renren, Tumblr, Linkedin, Twitter, and a host of other mobile applications. Recent studies on "Internet Addiction Disorder" (IAD)[46] have shown negative effects on social health, such as depression and anxiety disorders.[47] Problematic Internet Use (PIU) is a growing area of unease as well, with increasing concern as to behavioral consequences and associated risk factors.[48] In addition, researchers have found that excessive use and dependency

43 Jensen and Nutt, *The Teenage Brain,* 80.

44 Mikiyasu Hakoama and Hakoyama Shotaro, "The Impact of Cell Phone Use on Social Networking and Development Among College Students," *The American Association of Behavioral and Social Sciences Journal*, Vol. 15 (2011), 6.

45 See for example: Jason Carroll, et al, "Generation XXX: Pornography Acceptance and Use among Emerging Adults," *Journal of Adolescent Research*, Vol. 23, No. 1 (2008): 6–30.

46 Also called Pathologic/Problematic Internet Use (PIU).

47 See: N.A. Shapira, et al, "Psychiatric features of Individuals with Problematic Internet Use," *Journal of Affective Disorders*, Vol. 57, No. 1–3 (2000), 267–272. And N.A. Shapira, et al, "Problematic Internet Use: Proposed Classification and Diagnostic Criteria," *Depression and Anxiety*, Vol. 17, No. 4 (2003), 207–2016.

48 Ilana Lehmann and Varda Knonstam, "Growing up Perfect: Perfectionism, Problematic internet Use, and Career Indecision in merging Adults," *Journal of Counseling & Development*, Vol. 89, Spring (2011), 155.

on mobile phones, in particular, link to addictive attitudes and behaviours.[49] Even in the world of online gaming, there is growing concern that "playing console and Internet video games for more than one hour a day has negative social and academic effects in adolescents."[50] This is uniquely worrisome for those who are discipling EAs in Christian higher education contexts, when the draw of the dorm room MOBA stream-casts, e-sport challenges, and online D&D conquests sets in.

When it comes to reward centers in the emerging adult brain, neuroscience is leaning toward an understanding that, "The cascade of neuro-processes that kick off the brain's reward circuitry and the rush of the pleasure chemical dopamine can be triggered just as easily by the release of the latest iPhone as by alcohol, pot, sex, or a fast car. In some ways, technology *is* a drug."[51] In one localised study, two-thirds of emerging adult cellphone users experienced "phantom-vibration syndrome," where they thought their phone was vibrating when, in fact, it was not.[52] The constant rush of dopamine experienced when beeps, buzzes, and notifications are received produces rewarding pleasurable experiences that are hard to reverse. These associative outcomes result in a host of challenging neural processes and behavioral outcomes. As Jensen notes, "whether it's gambling, interacting on social media, or snorting coke, teenagers are particularly susceptible to the rush of good feelings that comes with stimulating the brain's reward centers."[53]

Addictive consequences, in many cases, do not dissipate as teens grows older. In one specific study with college students, of all their media technologies, students felt the most orphaned, sad, bereft, and grief-stricken when they had to go without their cell phones for only a twenty-four-hour period.[54] Without a cellphone, emerging adults have expressed they cannot communicate and are

49 M. Chóliz, "Mobile Phone Addiction: Point of Issue," *Addiction*, Vol. 105 (2010), 374.

50 Philip Chan and Terry Rabinowitz, "A Cross-Sectional Analysis of Video Games and Attention Deficit Hyperactivity Disorder Symptoms in Adolescents," *Annals of General Psychiatry*, Vol. 5, No. 16 (2006), (Accessed, March 21, 2016), http://www.annals-general-psychiatry.com/content/5/1/16.

51 Jensen and Nutt, *The Teenage Brain,* 206. Emphasis in original.

52 Jensen and Nutt, *The Teenage Brain,* 211.

53 Jensen and Nutt, *The Teenage Brain,* 216. For more on the reward systems in the brain, see: Kent C. Berridge and Terry E. Robinson, "What Is the Role of Dopamine in Reward: Hedonic Impact, Reward Learning, or Incentive Salience?" *Brain Research Reviews*, Vol. 28 (1998), 306–69.

54 Susan Moeller, "A Day Without Media," *Research conducted by ICMPA and the Phillip Merrill College of Journalism*, University of Maryland, College Park, (2010), (Accessed, July 10, 2016), https://withoutmedia.wordpress.com/study-conclusions/primarymedia/.

unable to operate in the world as they have become accustomed.[55] Moeller reported "Not having music when they [EAs] walked to class, when they exercised, or when they studied dramatically disconcerted many students."[56] As one emerging adult female articulates, "My iPhone provides the 'soundtrack' of my life."[57]

Most notably, in a study of how functional Magnetic Resonance Imaging (fMRI) correlates to Internet Addiction Disorder in healthy emerging adult brains, researchers concluded that "IAD may seriously affect young adults' brain functions."[58] The latest edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) has recently included IAD as a disorder, but acknowledges there is need for further study and research to determine courses of action in treating the disorder. Additionally, there are intervening factors associated with successfully diagnosing IAD, including emotional (feelings of guilt, anxiety, depression, euphoric feelings when in front of the computer, unable to keep schedules, isolation, avoiding doing work, etc.), physical (backache, headaches, weight gain or loss, disturbances in sleep, carpal tunnel syndrome, blurred or strained vision, etc.), and short and long-term memory effects.

Further examples of the effects of digital distractions in the lives of emerging adults have to do with sleeplessness. Current brain research acknowledges, "Today's generation can feed its insomnia in any number of electronic ways, especially texting, making winding down for an already unnaturally early sleep time that much more difficult."[59] A word of caution:

> Sleep deprivation inhibits the necessary synaptic pruning or prioritizing of information. And a lack of good sleep habits results in much more than a tired body and mind. It can have profound and lasting effects on teenagers and could contribute to everything from juvenile delinquency to depression, obesity, high blood pressure, and cardiovascular disease.[60]

55 Moeller, "A Day Without Media," n.p.

56 Moeller, "A Day Without Media," n.p.

57 Anonymous, "Interview with [name withheld]," *Personal Interview*, Wiesbaden, Germany, June 17, (2016).

58 Gianna Sepede, et al, "Functional Magnetic Resonance Imaging of Internet Addiction in Young Adults," *World Journal of Radiology*, Vol. 8, No. 2 (2016), 211. Researchers also concluded the following: "Taken together, the results of our systematic review suggest that young adult with IGD, without any other psychiatric disorder, showed a pattern of functional brain alterations similar to those observed in substance addiction," p. 224.

59 Jensen and Nutt, *The Teenage Brain,* 90.

60 Jensen and Nutt, *The Teenage Brain,* 96.

Within the brain's circuitry, just two hours of exposure to the displays of smartphones, computers, and other LED devices suppressed melatonin by about twenty-two percent.[61] A simple strategy for emerging adults, especially those who are notorious for staying awake for long hours at college studying, socialising with peers, streaming videos, gaming, texting, or simply updating their status, is that the display should be turned off one hour before bedtime to relax their overstimulated eyes and brain.

Additional research shows that emerging adults "who used their cell phone after 'lights out' not only had reduced time asleep but also were at increased risk of mental health disorder, including self-harm and suicide."[62] These assertions are not intended to instill fear in EAs, but challenge them to re-think the consequences of sustained engagement with digital media.

Exemplar: Print v. Digital Reading

One other area of focused investigation has to do with the brain and how it interacts with reading. There is growing evidence of differences between reading done in either digital or traditional, printed formats. As primary and secondary schools across the U.S. begin to increasingly implement digitally-oriented reading formats vis-à-vis iPads, Chromebooks, Kindle Fires, etc., educational leaders and classroom teachers are concerned if reading exclusively in digital formats might not adversely affect students' reading acquisition skills, comprehension abilities, and application. Those who have concerns related to the medium itself maintain, "Because we literally and physiologically can read in multiple ways, how we read—and what we absorb from our reading—will be influenced by both the content of our reading and the medium we use."[63] For youth workers who minister largely as "teachers of the Word" (Jas. 3:1), there are equivalent concerns as to possible implications for spiritual reading, personal Bible study habits, and memorisation of Scripture, especially if such "holy habits" are exclusively accommodated to through digital formats.

By way of orientation to the print-v.-digital concerns named above, neurophysiology has conclusively found the left side of the brain functions predominantly in "analytical" ways. Left-brain functions include logical operations, language acquisition and execution, science and math reasoning, rationality activities, objectivity, and reality-based processes. When it comes to interactions

61 Jensen and Nutt, *The Teenage Brain,* 100.

62 Jensen and Nutt, *The Teenage Brain,* 96.

63 Maryanne Wolf, "Our 'Deep Reading' Brain: Its Digital Evolution Poses Questions," *Nieman Reports*, Summer (2010), (Accessed: September 10, 2016), http://niemanreports.org/articles/our-deep-reading-brain-its-digital-evolution-poses-questions/.

between print and digital mediums of text, print text generally pumps "up the muscles of critical reasoning, logic, order, and abstract thinking."[64] Left-brain reading operations indicate that "These capacities require mentoring, discipline, and extensive repetition."[65] The kind of repetitions printed text demand aid in developing and exercising left-brain skills. In basic terms, print text tends to favor the left side of the brain.

The right brain, by contrast, is the "creative" side of the brain. Right-brain functions include sustained thought processes, intuition, creativity, artistic and musical functioning, risk-taking associations, and fantasy-based implementations. As Hipps asserts, "The invention of the photograph … eroded our dependence upon printing."[66] With images displacing the dominant medium of text, the right side of the brain began to take on a role in shaping our interactions with written words. In all respects, "The digital age has transformed the meaning of literacy. We still rely heavily on text, but the text-based communication of the Internet and instant messaging generate a fundamentally different kind of literacy—an unusual, right-brained sort of literacy."[67] Thus, digital text tends to favor the right side of the brain.

Neurophysiology maintains reading from a digital display is usually slower than reading from print.[68] In addition, reading from a digital display usually creates a higher cognitive load on the reader than reading from print.[69] Wolf maintains, "The omnipresence of multiple distractions for attention—and the brain's own natural attraction to novelty—contribute to a mind-set toward reading that seeks to reduce information to its lowest conceptual denominator."[70] However, readers do report stronger feelings of ownership when reading a printed text compared to a digital one.[71] This could be, in part, due to the spatial-time relationship as one physically interacts with print

64 Shane Hipps, *Flickering Pixels*: *How Technology Shapes Your Faith* (Grand Rapids, MI: Zondervan, 2009), 143.

65 Hipps, *Flickering Pixels*, 143.

66 Hipps, *Flickering Pixels*, 144.

67 Hipps, *Flickering Pixels*, 144.

68 J.D. Gould et al, "Reading is Slower from CRT Displays Than from Paper: Attempts to Isolate a Single-variable Explanation," *Human Factors,* Vol. 29, No. 3 (1987), 269–299.

69 D.S. Niederhauser, et al, "The Influence of Cognitive Load on Learning from Hypertext," *Journal of Educational Computing Research*, Vol. 23, No. 3 (2000), 237–255.

70 Wolf, "Our 'Deep Reading' Brain," n.p.

71 U. Armitage, S. Wilson and H. Sharp, "Navigation and Ownership for Learning in Electronic Texts: An Experimental Study." *Electronic Journal of E-Learning*, Vol. 2, No. 1 (2004), 20–31, (Accessed March 21, 2012), http://www.ejel.org/volume-2/vol2-issue1/issue1-art17.htm.

media (e.g., sinking comfortably into one's chair with a favorite book). And while stronger ownership has been shown to be beneficial, readers frequently report disorientation problems when reading from a digital display.[72]

Reading from a digital display is usually less methodological when compared to reading from print.[73] Quinn and Stark-Adam report most readers typically prefer to read long, academic texts in print, whereas they prefer to read shorter texts in a digital display.[74] This is especially significant when teens leave home for university and enter highly academically-challenging settings—another area of concern for many who craft pedagogical strategies for emerging adults. In addition, the digital display format usually affects text comprehension. For example, one study reported lower comprehension outcomes of digital content compared to printed text.[75]

Challies maintains, "In this time of transition when we are shifting from the printed word to the pixel word, we still find it difficult to focus on digital content the way we can on printed."[76] As a consequence, readers are trained to *skim* rather than engage. This problematic issue is exacerbated when, "Vertical reading, punctuated by turning a page, promotes the deep reading that is needed for comprehension, while horizontal reading, punctuated by clicks of a mouse, lure the reader to skim the surface of meaning, rather than delving deeply into it."[77] Thus, there may be significant loss of important insights and breakthroughs as adolescents are trained to leave behind deep reading mediated through printed text.[78]

Thus, in the lives of spiritually-developing emerging adults, engagement with God's Word, the Scriptures, must become more of an exercise in reflective engagement rather than skimming and hypertext appraisals. Devotional commitment to the intake of the Bible, especially from a brain-development perspective, requires more contemplative responses. The ancient and tradition-rich linier progression of deep "spiritual reading" takes on meditative responses, which

72 William Eveland and Sharon Dunwoody, "User Control and Structural Isomorphism or Disorientation and Cognitive Load?" *Communication Research*, Vol. 28, No. 1 (2001), 48–78.

73 S. Quinn and P. Stark-Adam, "What Are the Differences in Reading News in Print and Online?" *Eyetracko7 Report*, The Poynter Institute, April, 2007, (Accessed March 21, 2012), http://eyetrack.poynter.org/.

74 Carrie Spencer, "Research on Learner's Preferences for Reading from a Computer Screen," *Journal of Distance Education,* Vol. 21, No. 1 (2006), 33–50.

75 M.M. Rouet, et al, "Effects of Online Reading on Popular Science Comprehension," *Science Communication*, Vol. 25, No. 2 (2003), 99–128.

76 Challies, *The Next Story*, 127.

77 Hipps, *Flickering Pixels*, 146.

78 Wolf, "Our 'Deep Reading' Brain," n.p.

will largely be neglected when exclusively accommodated through digital means. Those who work with EAs, then, are challenged to aid those under their mentorship toward deeper apophatic postures as they direct them in growth as people of the Word.

The Shaping of a Theological Response: Who's Shaping Whom?

> Do not conform to the pattern of this world, but be transformed by the renewing of your mind. Then you will be able to test and approve what God's will is–his good, pleasing and perfect will.
>
> ROMANS 12:2, NIV

As demonstrated, new media advances in culture and society have taken on a shaping effect, both within the individual neural capacities of the developing adolescent brain and the outcomes linked to relational spheres of influence, be they peer, family, or religious. As the famous "medium-is-the-message" theorist Marshall McLuhan argued, each medium is an extension of ourselves, altering the relationship of the person to their surrounding cultural context.[79] Carr observes, "As our window onto the world, and onto ourselves, a popular medium molds what we see and how we see it—and eventually, if we use it enough, it changes who we are, as individuals and as a society."[80]

Equally true is the effect new media has had in shaping our theological and religious perspectives in terms of understanding ourselves, not only in relation to one another, but also with our heavenly Father. Elofson states, "These technologies have undeniably led to significant benefits in terms of our ability to communicate with each other and our immediate access to unlimited amounts of information."[81] However, he continues, "the widespread adoption of new digital media is also shaping our habits and minds in ways that could potentially hinder people's ability to participate in practices that Christians have historically understood as deeply formative."[82] Thus, with each new emerging technology, the church and those who minister uniquely to EAs are challenged with discerning the effects of each technology on individual and

79 Gardner and Davis, *The App Generation*, 22.

80 Carr, *The Shallows*, Loc. 111.

81 Matt Elofson, "New Digital Media: A Contemporary 'Eternal Fear'," *The Journal of Youth Ministry*, Vol. 12, No. 2 (2014), 33.

82 Elofson, "New Digital Media," 33–34.

corporately-shared experiences. Developing a suitable rejoinder to technology's shaping dynamics requires both a Scriptural and theological response.

A Biblical Response: Conforming & Transforming

Scripture, in general, addresses realities about cultural and individual-shaping in various ways. Romans 12:2, most notably states, "And do not be conformed to this world, but be transformed by the renewing of your mind, so that you may prove what the will of God is, that which is good and acceptable and perfect" (NASB). The verb "conform" (*suschématizó*) speaks to the idea of allowing something from the *outside* to shape oneself, assuming a similar outward form.[83] Whether the individual is passive or active in this process may, or may not, matter. The point being, something external is shaping the individual's values, perspectives, attitude, and behaviours to the norm of the influencing agent. In various ministry contexts, "American Christian leaders and organizations exhibit a propensity towards the rapid adoption of novel strategies and technologies they perceive will assist them in ministering to people more 'effectively.'"[84] Overenthusiasm to the latest digital up-sync comes at a price, often with little to no reflection on conforming consequences. This conformity dynamic is expressed in other passages of Scripture: 1 Pet 1:14; Ex. 23:2; Lev. 20:23; Deut. 18:9; Dan. 1:8; Eph. 4:17; 5: 1–2; Col. 3:7–8.

In the lives of emerging adults, conformity's progeny has too often resulted in negative outcomes for shaping their lives. As Elofson notes: "By repeatedly opting to split their attention between various screens, stimuli, and activities, they form habits that will not only shape their regular practices and interactions but will also profoundly shape their minds."[85] Thus, in a hyper-connected world, network individualism demands allegiance to conformity. Emerging tech-savvy models of youth ministry advocate, "The task given to students by networked individualism is to craft an identity that is palatable for consumption by others."[86] Unbridled digital consumption, in whatever form it takes in the life of emerging adults, is inconsistent with Scripture's call to live free of the world's conforming briberies.

---

83 James Swanson, Dic*tionary of Biblical Languages with Semantic Domains: Greek* (*New Testament*), (Oak Harbor: Logos Research Systems, Inc., 1997), Electronic Edition. Only one other occurrence of συσχηματίζεσθε appears in the New Testament. 1 Peter 1:14—"As obedient children, do not be *conformed* (συσχηματίζω) to the former lusts which were yours in your ignorance."

84 Elofson, "New Digital Media," 43.

85 Elofson, "New Digital Media," 41.

86 Zirschky, *Beyond the Screen*, Loc. 2268–2269.

Consider, however, the other verb in Romans 12:2, "transform" (*metamorphoó*). Etymologically, this is where the English term "metamorphosis" originates. It carries with it the ideas of "change the form," or "transform."[87] It is an indication of allowing something from the *inside* to shape oneself. In contrast to conformity, whether one is passive or active in this process *does* matter. In other words, this internal transformation, in both spiritual and existential terms, is being generated from a "Someone," namely, the Holy Spirit. Therefore, emerging adults who desire a deep, abiding relationship in Jesus Christ either allow or fight against internal, Spirit-originating processes meant to shape them into the person God longs them to be. This transforming dynamic is expressed in other passages of Scripture: Rom. 8:13–17; 15:15–16; 1 Cor. 6:11; 2 Cor. 3:18; Eph. 1:13–14; 2 Thess. 2:13; Titus 3:4–7.

New media, in this respect, too often impedes emerging adults' abilities to be open to the transforming process. As Laytham rightly expresses, "The *regardless power* of my iPod (and my cell phone and my Netflix subscription and all the rest) invites me to habitually ignore the limits where God's love waits to make me whole."[88] The integrative purpose of having emerging adults interact with the conforming and transforming realties of digital engagement is to demonstrate thoughtful collaboration with personal conviction, theological tradition, a biblical understanding of personhood in the context of social relationships, and related cultural nuances. Thus, working toward developing a personal theology of technology with emerging adults ought to be a mainstay of youth practitioners.

Aiding EAs in Developing a Personal Theology of Technology

Helping EAs better understand conforming and transforming realities aids in the development of a personal theology of technology, thereby avoiding the

87 Swanson, *Dictionary of Biblical Languages*. Only three other occurrences of μεταμορφόω occur in the New Testament: "And He was *transfigured* (μεταμορφόω) before them; and His face shone like the sun, and His garments became as white as light" (Matt. 17:2, NASB). "Six days later, Jesus took with Him Peter and James and John, and brought them up on a high mountain by themselves. And He was *transfigured* (μεταμορφόω) before them" (Mark 9:2, NASB). "But we all, with unveiled face, beholding as in a mirror the glory of the Lord, are being *transformed* (μεταμορφόω) into the same image from glory to glory, just as from the Lord, the Spirit" (2 Cor. 3:18, NASB).

88 Laytham, *iPod, YouTube, WiiPlay*, 41. Emphasis added. Laytham is quoting Borgmann's (*Power Failure: Christianity in the Culture of Technology*) notion of "regardless power," which is defined as: "… the technologically given capacity to procure a result regardless of the recalcitrance or variety of circumstances … Switches, keys, pointers, buttons, and dials are the insignia of this inconspicuous and consequential power through which we summon up, regardless of time, place, skill or strength, whatever we need or desire."

lures of digital distraction and instead allowing for successful implementation of digital stewardship. For example, encouraging EAs to understand new media in conforming contexts can further their understanding of the reality of technology's "principalities and powers" influence (Eph. 6:12). Namely, the influence of social media as a "tempter," seducing EAs into fabricated relationships—generating illusions of intimacy, and projecting intangible postures of reality.[89] On Facebook, one can read about others' "likes," relationships, romances, or even favorite movies and music. But this does not imply people are *known* or that individuals have earned the right to speak into the lives of others. Social media often removes nuance. It reduces people to words. Reading what certain people Tweet about others can cause someone to form favorable, or unfavorable, opinions about them, but social media's presence does not provide an accurate representation of who they actually are. Thus, a biblically-mediated response to conforming enticements will help EAs avoid potential threats to individual and corporate experiences within the Body of Christ.

On the other hand, developing an emerging adult's awareness of transforming perspectives helps with interpretations of social media as a plausible space for developing mediated—and possibly healthy—relationships. People use the benefits of technology to establish, foster, and sustain healthy and growing identities of themselves and of others. As Baym notes, "new media offer the promise of more opportunity for connection with more people, a route to new opportunities and to stronger relationship and more diverse connections."[90] This can be advantageous to individuation and healthy social interactions with friends, peers, classmates, fellow workers, and family members. Boyd equally affirms that "What matters is not the particular social media *site* but the *context* in which it's situated within a particular group of youth."[91] A healthy multisite reality perspective, taken in light of maturing Scriptural understanding and healthy faith-based relationships, can help emerging adults gain "big picture" perspectives of *conforming* limitations and *transforming* possibilities in their lives.

As already noted, theological tension between conforming and transforming realities rests, most likely, somewhere between utopian and dystopian views of technology (Rom. 15:1; 1 Cor. 6:12; 8:9; 10:23; Eph. 4:29). There is often no "context" provided for social interactions online, and social media does most

89 Glenn Packiam, "Tweeting My Life Away: My Online Interactions Were Hurting My Pastoral Presence," *Leadership Journal*, Summer (2013), 40–43.

90 Nancy Baym, *Personal Connections in the Digital Age* (Malden, MA: Polity Press, 2010), 1.

91 Boyd, *It's Complicated*, 39.

often feed narcissism.[92] Sometimes, online tendencies are difficult to control, especially when one owns a smart phone. Social media frequently encourages emerging adults to be in two places at once. Thus, in the context of developing an awareness of the shaping values of digital engagement, the emerging adult must ask herself if she is being conformed by the outside agency of technology or taking the initiative to allow the Holy Spirit to transform her perspectives of how she interacts with technology. She needs help.

Conclusion: Digital Stewardship or a Crowdsourced View of God?

> Then make my joy complete by being like-minded, having the same love, being one in spirit and of one mind.
>
> PHILIPPIANS 2:2, NIV

Herein lies an ongoing challenge—encouraging emerging adults to take up the mantle of theological and technological personal inquiry. Shatzer notes, "The challenging thing about the technological question is that it always needs asking and it continually evades a final answer. Humans make things, and the making has consequences even for our very perception of reality. This making *shapes* us."[93] Stated differently, digital engagement is a reality for believers in the age of new media, affecting faith and a way of living it forward.[94] In the end, the question is clear: "if the electronic media and digital technologies 'modify the way of communicating and even that of thinking, what impact will they have on the way we do theology?'"[95] A call away from networked individualism to corporate engagements of spiritual worship, instruction, and service (Hebrews 10:23–25) become tempered by an appropriate understanding of technology's shaping effects, co-joined with digital discipleship and personal discipline.

---

92 For a helpful work in the intersection between emerging adulthood and narcissism, see: Jean Twenge and Keith Campbell, *The Narcissism Epidemic: Living in the Age of Entitlement* (New York, NY: Free Press, 2009).

93 Jacob Shatzer, "Theology and Technology: Mapping the Questions," *Ethics & Medicine*, Vol. 31, No. 2 (2015), 104. Emphasis added.

94 Antonio Spadaro, *Cybertheology: Thinking Christianity in the Era of the Internet* (Bronx, NY: Fordham University Press, 2014), Kindle Edition, Loc. 204–205.

95 Berger in Spadaro, Loc. 360–362.

Considering a "theology of technology" for a majority of emerging adults, is a nebulous void, largely un-considered—or loosely reflected on—with neutral uncertainty. Technology offers both an appeal for astonishment and disquiet.[96] However, emerging adults are not alone, as this posture, in general, is maintained by the majority of Christians in the United States, who "evaluate technology based on the assumption that technology, as a tool, is a neutral device to which human agents give moral significance in the way they choose to use it."[97] This overly simplistic view of technology on the part of emerging adults does little to underscore the multi-faceted workings of technology's ideology, occupation, and sway in their daily lives. Thus, "theological reflection on technology is of great importance because it acknowledges that technology is more than just artefacts; it embraces human beings, their relationships and the values according to which they live."[98] As distinguished above, the compelling question then becomes, "Is technology something to celebrate or fear?" This paper sufficiently concurs with a middle-ground posture toward new media, in the midst of others who are either overly optimistic or pessimistic, depending to some degree on their mission.[99]

In order to inform and aid emerging adults with a balanced view of technology, a reorientation to a biblical understanding of technology's conforming influences remains necessary. Otherwise, EAs fall prey to, and are potentially victimised by, a crowdsourced view of God and their relationship with Him.[100] Equally evident is the need to view multisite realities in a religiously-shaping way, advocating fuller expressions of transforming Christian faith both on and offline.

---

96 Antonio Spadaro, *Cybertheology: Thinking Christianity in the Era of the Internet* (Bronx, NY: Fordham University Press, 2014), Kindle Edition, Loc. 141.

97 Shatzer, "Theology and Technology," 87.

98 Anita Cloete, "Living in a Digital Culture: The Need for Theological Reflection," *HTS Theological Studies*, Vol. 71, No. 2 (2015), 3.

99 Shatzer, "Theology and Technology," 90.

100 The term "crowdsource" is used to underscore the phenomenon of creating perceptions of reality and truth on the collective idea, rather than an authoritative and objective source—e.g., the Bible. "Crowdsourcing" by definition is: a problem-solving methodology that, "… creates an economy built upon the power of the idea rather than upon the position or power of the one proposing the idea while at the same time leveraging the benefits of diversity." Thomas Ingram, "Crowdsourcing and the Church," *Patheos.com*, Jan. 21, 2015, (Accessed, July 23, 2016), http://www.patheos.com/blogs/evangelicalpulpit/2015/01/crowdsourcing-and-the-church/.

References

Ahmad, Irfan. "Facebook, Twitter, YouTube, Pinterest, Instagram: What Happens in One Minute on the Internet - #infographic," *Digital Information World.com*, August 2015. Accessed, August 15, 2015. http://www.digitalinformationworld.com/2015/08/infographic-data-never-sleeps.html?m=1.

Anonymous, "Interview with [name withheld]," *Personal Interview*, Wiesbaden, Germany, June 17, (2016).

Armitage, U., Wilson, S., and Sharp, H. "Navigation and Ownership for Learning in Electronic Texts: An Experimental Study." *Electronic Journal of E-Learning*, Vol. 2, No. 1 (2004): 20–31. Accessed March 21, 2012. http://www.ejel.org/volume-2/vol2-issue1/issue1-art17.htm.

Arnett, Jeffery. "Emerging Adulthood: A Theory of Development from the Late Teens Through the Twenties." *American Psychologist*, Vol. 55, No. 5, (2000): 469–480.

Baym, Nancy. *Personal Connections in the Digital Age*. Malden, MA: Polity Press, 2010.

Berridge, Kent C., and Robinson, Terry E. "What Is the Role of Dopamine in Reward: Hedonic Impact, Reward Learning, or Incentive Salience?" *Brain Research Reviews*, Vol. 28 (1998): 306–369.

Borba, Michele. "Highlights Magazine Releases 2014 State of the Kid Survey." *Entertainment Close-up* 13 Oct. 2014.

Boyd, Danah. *It's Complicated: The Social Lives of Networked Teens*. New Haven, NJ: Yale University Press, 2014.

Campbell, Heidi and Garner, Stephen. *Networked Theology: Negotiating Faith in Digital Culture*. Grand Rapids, MI: Baker Academic, 2016.

Carr, Nicholas. *The Shallows: What the Internet Is Doing to Our Brains*. New York, NY: W.W. Norton & Company, 2010. Kindle Edition.

Carroll, Jason, Padilla-Walker, Laura, Nelson, Larry, Olson, Chad, McNamara Barry, Carolyn and Madsen, Stephanie. "Generation XXX: Pornography Acceptance and Use among Emerging Adults," *Journal of Adolescent Research*, Vol. 23, No. 1 (2008): 6–30.

Challies, Tim. *The Next Story: Faith, Friends, Family, and the Digital Word*. Grand Rapids, MI: Zondervan, 2015.

Chan, Philip and Rabinowitz, Terry. "A Cross-Sectional Analysis of Video Games and Attention Deficit Hyperactivity Disorder Symptoms in Adolescents," *Annals of General Psychiatry*, Vol. 5, No. 16 (2006). Accessed, March 21, 2016. http://www.annals-general-psychiatry.com/content/5/1/16.

Cloete, Anita. "Living in a Digital Culture: The Need for Theological Reflection," *HTS Theological Studies*, Vol. 71, No. 2 (2015). http://dx.doi.org/10.4102/hts.v71i2.2073.

Chóliz, M. "Mobile Phone Addiction: Point of Issue," *Addiction*, Vol. 105 (2010): 373–374.

Doster, Leigh. "Millennial Teens Design and Redesign Themselves in Online Social Networks." *Journal of Consumer Behaviour*: Vol. 12, (2013): 267–279.

Dunn, Richard and Sundene, Jana. *Shaping the Journey of Emerging Adults: Life-Giving Rhythms for Spiritual Transformation*. Grand Rapids, MI: InterVarsity Press, 2012.

Elofson, Matt. "New Digital Media: A Contemporary 'Eternal Fear'," *The Journal of Youth Ministry*, Vol. 12, No. 2 (2014): 33–51.

Eveland, William and Dunwoody, Sharon. "User Control and Structural Isomorphism or Disorientation and Cognitive Load?" *Communication Research*, Vol. 28, No. 1 (2001): 48–78.

Gardner, Howard and Davis, Katie. *The App Generation: How Today's Youth Navigate Identity, Intimacy, and Imagination in a Digital World*. New Haven, CT: Yale University Press, 2013.

Girl Scout Research Institute. "Who's That Girl? Image and Social Media." *Girlscout.Org,* 2010. Accessed: September 5, 2015. http://www.girlscouts.org/content/dam/girlscouts-gsusa/forms-and-documents/about-girl-scouts/research/gsri_social_media_fact_sheet.pdf.

Gould, J.D., Alfaro, L., Barnes, V. Finn, R., Grischkowsky, N., and Minuto, A. "Reading is Slower from CRT Displays Than from Paper: Attempts to Isolate a Single-variable Explanation," *Human Factors,* Vol. 29, No. 3 (1987): 269–299.

Hakoama, Mikiyasu and Shotaro, Hakoyama. "The Impact of Cell Phone Use on Social Networking and Development Among College Students," *The American Association of Behavioral and Social Sciences Journal*, Vol. 15 (2011): 1–21.

Hipps, Shane. *Flickering Pixels*: *How Technology Shapes Your Faith*. Grand Rapids, MI: Zondervan, 2009.

Howell, Bradley in Clark, Chap, Ed. *Adoptive Youth ministry: Integrating Emerging Generations into the Family of Faith*. Grand Rapids, MI: Baker Academic, 2016.

Ingram, Thomas. "Crowdsourcing and the Church," *Patheos.com*, Jan. 21, 2015. Accessed, July 23, 2016. http://www.patheos.com/blogs/evangelicalpulpit/2015/01/crowdsourcing-and-the-church/

Jensen, Frances with Nutt, Amy. *The Teenage Brain: A Neuroscientist's Survival Guide to Raising Adolescents and Young Adults*. New York, NY: Harper Collins, 2015.

Laytham, Brent. *iPod, YouTube, WiiPlay: Theological Engagements with Entertainment*. Eugene, OR: Cascade Books, 2012.

Lehmann, Ilana and Knonstam, Varda. "Growing up Perfect: Perfectionism, Problematic internet Use, and Career Indecision in merging Adults," *Journal of Counseling & Development*, Vol. 89, Spring (2011): 155–162.

Moeller, Susan. "A Day Without Media," *Research conducted by ICMPA and the Phillip Merrill College of Journalism*, University of Maryland, College Park, (2010). Accessed, July 10, 2016. https://withoutmedia.wordpress.com/study-conclusions/primarymedia/.

Niederhauser, D.S., Reynolds, R.E., Salmen, D., and Skolmoski, P. "The Influence of Cognitive Load on Learning from Hypertext," *Journal of Educational Computing Research*, Vol. 23, No. 3 (2000): 237–255.

Packiam, Glenn. "Tweeting My Life Away: My Online Interactions Were Hurting My Pastoral Presence," *Leadership Journal*, Summer (2013): 40–43.

Perrin, Andrew. "Social Networking Usage: 2005–2015." *Pew Research Center*, October 2015. Accessed: February 15, 2016. http://www.pewinternet.org/2015/10/08/2015/Social-Networking-Usage-2005-2015/.

Powell, Kara, Mulder, Jake and Brad, Griffin. *Growing Young: Six Essential Strategies to Help Young People Discover and Love Your Church*. Grand Rapids, MI: Baker Books, 2016.

Quinn, S., and Stark-Adam, P. "What Are the Differences in Reading News in Print and Online?" *Eyetracko7 Report*, The Poynter Institute, April, 2007. Accessed March 21, 2012. http://eyetrack.poynter.org/.

Rainie, Lee and Wellman, Barry. *Networked: The New Social Operating System*. Cambridge, MA: The MIT Press, 2012.

Rideout, Victoria, Foehr, Ulla and Roberts, Donald. *Generation M2: Media in the Lives of 8- to 18-Year-Olds*. Menlo Park, CA: The Kaiser Family Foundation, 2010.

Rouet, M.M., Rouet, J.F., Epstein, I., and Fayard, P. "Effects of Online Reading on Popular Science Comprehension," *Science Communication*, Vol. 25, No. 2 (2003): 99–128.

Sepede, Gianna, Tavino, Margherita, Santacroce, Rita, Fiori, Federica, Salerno, Rosa Maria and Giannantonio, Missimo Di. "Functional Magnetic Resonance Imaging of Internet Addiction in Young Adults," *World Journal of Radiology*, Vol. 8, No. 2 (2016): 210–225.

Setran, David and Keisling, Chris. *Spiritual Formation in Emerging Adulthood: A Practical Theology for College and Young Adult Ministry*. Grand Rapids, MI: Baker Academic, 2013.

Shapira, N.A., Goldsmith, T.D., Keck Jr., P.E., Khosla, U.M., and McElroy, S.L. "Psychiatric features of Individuals with Problematic Internet Use," *Journal of Affective Disorders*, Vol. 57, No. 1–3 (2000): 267–272.

Shapira, N.A., Lessig, M.C., Goldsmith, T.D., Szabo, S.T., Lazoritz, M., Gold, M.S., and Stein, D.J. "Problematic Internet Use: Proposed Classification and Diagnostic Criteria," *Depression and Anxiety*, Vol. 17, No. 4 (2003): 207–2016.

Shatzer, Jacob. "Theology and Technology: Mapping the Questions," *Ethics & Medicine*, Vol. 31, No. 2 (2015): 87–108.

Spadaro, Antonio. *Cybertheology: Thinking Christianity in the Era of the Internet*. Bronx, NY: Fordham University Press, 2014. Kindle Edition.

Spencer, Carrie. "Research on Learner's Preferences for Reading from a Computer Screen," *Journal of Distance Education,* Vol. 21, No. 1 (2006): 33–50.

Swanson, James. *Dictionary of Biblical Languages with Semantic Domains: Greek* (*New Testament*), Oak Harbor: Logos Research Systems, Inc., 1997. Electronic Edition.

Thompson, Clive. *Smarter than You Think: How Technology is Changing Our Minds for the Better.* New York, NY: The Penguin Press, 2013.

Turkle, Sherry. *Alone Together: Why We Expect More from Technology and Less from Each Other*. New York, NY: Basic Books, 2011.

Turkle, Sherry. *Reclaiming Conversation: The Power of Talk in a Digital Age*. New York, NY: Penguin Publishing, 2015.

Twenge, Jean, and Campbell, Keith. *The Narcissism Epidemic: Living in the Age of Entitlement*. New York, NY: Free Press, 2009.

Twenge, Jean, Exline, JJ, Grubbs, JB, Sastry, R, and Campbell, WK. "Generational and Time Period Difference in American Adolescents' Religious Orientation 1966–2014," *PLoS ONE*, Vol. 10, No. 5, 2015: 1–17.

Weinreich, Harald, Obendorf, Hartmut, Herder, Eelco and Mayer, Matthias. "Not Quite the Average: An Empirical Study of Web Use," in the *ACM Transactions on the Web*, vol. 2, no. 1 (February 2008), article #5.

Wolf, Maryanne. "Our 'Deep Reading' Brain: Its Digital Evolution Poses Questions," *Nieman Reports*, Summer (2010). Accessed: September 10, 2016. http://niemanreports.org/articles/our-deep-reading-brain-its-digital-evolution-poses-questions/

Zephoria Digital Marketing. "The Top 20 Valuable Facebook Statistics." *Zephoria Digital Marketing*, Updated July, 2016. Accessed August 1, 2016. https://zephoria.com/top-15-valuable-facebook-statistics/.

Zimmerman, Jess. "The Internet is Fertile Ground for the Mosaic of Allegiances out of Which Teens Build Identity." *The Guardian*. January 12, (2015). http://www.theguardian.com/commentisfree/2015/jan/12/internet-mosaic-teens-build-identity.

Zirschky, Andrew. *Beyond the Screen: Youth Ministry for the Connected but Alone Generation*. Nashville, TN: Abingdon Press, 2015. Kindle Edition.