How Increasing Technology Reliance is Influencing Behaviors and Happiness

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Abstract. The relentless permeation of technology continually reshapes human behavior, interactions, and reactions. These, in turn, directly impact—for better and worse—personal happiness. This paper studies the issue from four perspectives. First, how specific, important behaviors are changing what we do more of, and what we are doing less frequently. Second, how these changes influence time choice decisions. Third, what influence these behavioral changes and time choice decisions has on happiness. Fourth, how these changing behavioral trends—along with the "Facebook Effect"—map against Abraham Maslow's Hierarchy of Needs and the human pursuit of happiness. This paper shares twenty-one specific examples of things we now do more of, and fourteen behaviors we are now doing less of; and overlays these changes against time-use decision-making and the impact of those time choices on happiness.

Keywords: technology, influence, behavior change, time utilization, happiness, Facebook, Maslow's Hierarchy of Needs

1 Introduction

The remarkable acceleration and increasing reliance and permeation of exploding technology across the globe brings is radically changing human behavior [2, 9]. Some of these changes can be intentionally designed to be beneficial [3], while others can have opposite effects [1, 10]. New technologies compete with old ones for time, for attention [9], for happiness [5], and so on. This paper shares twenty-one specific examples of things we now do more of, and fourteen behaviors we are now doing less of; and overlays these changes against time-use decision-making and the impact of those time choices on happiness.

This paper studies the issue from four perspectives. First, how specific, important behaviors are changing what we do more of, and what we are doing less frequently. Second, how these changes influence time choice decisions. Third, what influence these behavioral changes and time choice decisions has on happiness. Fourth, how these changing behavioral trends—along with the "Facebook Effect" [4]—map

against Abraham Maslow's Hierarchy of Needs [6-7] and the human pursuit of happiness.

2 Importance of Specific Behavioral Changes

While inarguable that technology permeation influences behavior, the two-pronged fundamental principle of human behavior remains constant:

What we think shapes how we feel. Accumulated thoughts, both positive and negative, continually reshape our outlook. While our life lens and core beliefs are established during our formative years (0-to13), reshaping comes about due to significant emotion events—good and bad—as well as life's steady stream of emotional inputs and outputs. Since technology allows a remarkably accelerating accumulation of thoughts, societies of the future must respect fundamental behavioral principles with great responsibility. This rapid accumulation of horizontal and vertical thoughts, as demonstrated by today's relentless reshaping of behaviors, steadily stream through, and anchor down, in crowded brains in positive and negative ways.

How we feel – the emotional conclusions we reach as a result of thought accumulation – drives what we do. Thoughts shape positive and negative perspectives. When emotional triggers reach a point strong enough to merit action, we do so for one of two reasons: the pursuit of a positive reward, or the avoidance of a negative consequence. While fear is the dominant behavioral motivator, it is important to recognize that fear crowds the mind with negative emotional beliefs. The challenge in building a forward-thinking, technology-influenced society is minimizing the fear element and maximizing the behavioral drivers of positive pursuit.

When technology-influence thoughts percolate to the point of creating emotional conclusions strong enough to act upon, behaviors result in ways that make us do more of some things, and less of others.

3 Changing Behaviors: What We Are Doing *More* Of

Table 1 illustrates common behaviors that are increasing in frequency, each of which will be mapped against its impact on subsequent time utilization choices.

Table 1. INCREASING BEHAVIORS

ASPECT	DESCRIPTION	IMPLEMENTATION EXAMPLE
Global engagement	Social, political, financial, religious, etc.	Understanding, misunderstanding, information and "misinformation" are all increasing

Digital addiction, addiction denials, addictive behavioral justification	Alarming growth in this new area of study, the first where the afflicted have no desire to be cured, simply the desire to "manage it better."	Fatalities from texting and driving, rising injuries from texting while walking, death by video game marathons, etc.
Stress and fatigue	Technology is a silent partner, so the pressure to produce and get ahead or meet expectations builds.	People who are "busy" but not productive feel fatigue. Fatigue leads to negative behavioral choices.
Texting/dopamine craving	The pursuit of dopamine jolts is addictive.	Power and jolt of dopamine release depends on the importance of the sender.
Helicopter and digital parenting	Smothering choice-and-consequence learning through technological blanketing and meddling.	Feeding digital addiction via gadgetry to keep the child occupied, rather than behavioral accountability and emotional maturity.
Snap judgments	Instant info knee-jerks instant decision-making.	Management by fact supplanted by assumptive judgment.
Reckless driving and road rage	Technology's impatience and desire for immediacy continues behind the wheel.	Diminished cognitive emotional control dramatically increases risk.
Telepressure	The feeling that we must be available 24/7.	Majority of Millennials never turn off (and sleep with) their phone.
Password insanity and the frustration that goes with it	Sites and organizations create rules for their convenience, not ours.	Accelerated confusion and frustration become a sustained hassle
Oversubscription	The frenzied desire to cram more into each day.	Frustration that comes from mistaking relentless busy for efficient and productive.
Complication of things that require no complication	The extra decisions and steps and decisions now required to execute what used to be a menial task.	The multiple button-pushing selections now required to simply buy and pump petrol at the station.
Skyrocketing advertisements via abrupt, incessant, annoying intrusion	Ads on the Internet are limitless and unregulated; each designed to inspire a need or inadequacy.	Fifty years ago a person saw one million ads in a lifetime. It is currently over one million per year and rising.

"Busy" (the velocity of life)	The busier the person, the shorter the attention span.	Sedentary busyness contributes to physical and mental fatigue.
Increased speed of "3-headed"* cranial juggling	*How we *want* to appear to others, how we *do* appear to others, and *who we really are.*	Teen and college suicides increasing due to inability to reconcile negative perceptions of others.
Portals into the mind	The more we invent to simplify our lives, the more complicated it becomes.	More access vehicles than ever, all designed to jam more thoughts into the mind.
"Do-it-yourself" society	An evolving behavioral exodus from service-centric interactions.	Often frustrating, time-consuming, and unrewarding.
Frustration and impatience	Technology is all about speed, access, and immediacy. None of these teach patience.	Human attention spans shortening. Recently measured akin to that of a goldfish.
Cyber-criminals, cyber-bullies, and the growing threat of cyber-terrorism	None of these existed a generation ago. Now they loom as inevitable foes.	Strike at the emotional core of safety and survival.
Instant notoriety (both good and bad)	People used to have to *accomplish* something to become noteworthy. Now they simply have to *do* something.	"If it bleeds, it leads." The media can make instant martyrs of anyone; or instant celebrities without regard to earned achievement.
Political cesspooling	"What is wrong with the other guy" has supplanted "What I stand for" in American politics.	Indefensible fear mongering sells and works better than facts and objectivity.
"Gotcha" political correctness	The web traps misspoken statements faster and easier than a farmer gets a mouse in a grain silo.	What someone says too often taking back seat to what he or she truly means. With no defense or recourse.

3.1 Increasing Behaviors Summary

Reviewing the list above clearly illustrates that many of the behaviors technology is shaping create negative emotional experiences and therefore are to our detriment. These negatives must be offset by positive emotional experiences gained elsewhere simply to get our thoughts back in balance. In order to reach a *positive* frame of mind, any (or all) of these negative thoughts must be exceeded by multiple positives.

4 Changing Behaviors: What We Are Doing *Less* Of

Just as technology is causing us to do more of some things (above in Table 1), it is changing what we do less of, see Table 2.

Table 2. DECREASING BEHAVIORS

ASPECT	DESCRIPTION	IMPLEMENTATION EXAMPLE
Sleep	Quality, quantity, and REM are all negatively impacted by minds saturated by technological overcrowding.	Sufficient sleep resets the brain to allow us to wake refreshed and "ready to go" at the start of a new day.
Self-awareness	People are less cognizant of those around them, and the impact their behaviors may have on themselves and others.	Ten percent of all pedestrian visitors to hospital emergency rooms are caused by texting and walking.
Attention spans	Ability to concentrate noticeably diminishing.	Transient attention span now measured at eight seconds.
Fitness (physical and emotional)	Obesity and sedentary habits cause physical and mental challenges.	Strong of mind and body getting harder to find. Both require work, not shortcuts.
Manners	Self-preoccupation and a "me first" impulsiveness.	The downside of helicopter parenting: selfishness.
Business maturity	Coddled students struggling to adapt to competitive landscape of workplace reality.	Job-hopping is rampant among the young. Companies scared to invest in workers; workers scared to invest in companies.
Wisdom	Knowledge is in the box now, not the mind.	*"You don't need to know anything any more. You just gotta know where to find it."* – American billionaire Mark Cuban, a tech mogul
Patience	We are becoming more of an interruptive society that judges first, rather than seeking to understand.	Patience sports: hunting, fishing, sailing, golfing – all are seeing markedly lower participation rates.
Ability to effectively manage the crowded mind's Worry Circle	Emotional illness worse now than during the worst of the recession. Crowded	Suicide rates in the USA have increased nearly 20 percent in the past 12 years.

	heads are not balanced heads. The ability to manage increased stress appears to be worsening.	It is especially disturbing to note the rise in depression and suicide among the younger generation (mid-20s on down).
Critical thinking	People seek reaffirming evidence, rather than contrary.	Info is everywhere; but finding fact and analyzing facts is becoming a lost art.
Privacy	None of us has privacy.	Personal intrusion—known or secret—exists for all.
Accountability	Spin doctors, denials, PR firms, lawyers, and computer keystrokes deflect all.	Children reared without it become adults reluctant or unwilling to accept it.
Communication skills	Handwriting, grammar, spelling, and punctuation are the endangered rhinos of language.	Scores in core skills decreasing. Some USA schools replacing cursive handwriting with keyboard skills.
Feeling of productive, happy daily achievement	Technological immersion seems less an enabler than it possibly could be.	Just 30 percent of American employees feel engaged or inspired at their job, with 70 percent feeling unfulfilled.

4.1 Decreasing Behaviors Summary

Just as Table 1 previously showed how Increases in certain behaviors can negatively impact the mind, we add to that Table 2's list of Decreasing Behaviors. These changes impact all age groups, most dramatically the younger workers for whom technology and tool use is organic by nature, rather than acquired (as it must be for older workers raised in a pre-technology world).

Because of their combined influence, it is important to map these emotional effects against the desired state of positive behavioral time choices.

5 How Changes Influence Time Choice Decisions

Time decisions are a vital study point because waking hours pass one of four ways, and how that time passes and our lives pass by drives happiness and fulfillment [8].

Because time is finite and equal to all—168 hours per week total, 112 presumed waking—it is insightful to map how our chosen behaviors fall into the four time-use categories (Fig. 1):

1. Wasted time.
2. Spent time.

3. Invested time.
4. Cherished time.

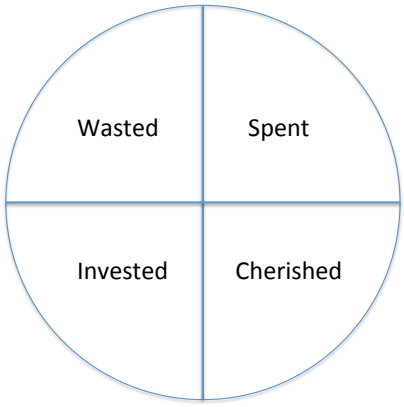

Fig. 1. Mediocre time model

5.1 The Time-Choice Pie: Each Day Consists of Four Slices

If we imagine each day as a pie that must be cut into four pieces, life will be unfulfilled if we waste and spend too much on things with little or no return, while investing and cherishing too little.

A happier life will cut those slices differently: It will invest and cherish as much as possible (via large slices) and waste and spend as little as necessary (small slices), see Fig. 2.

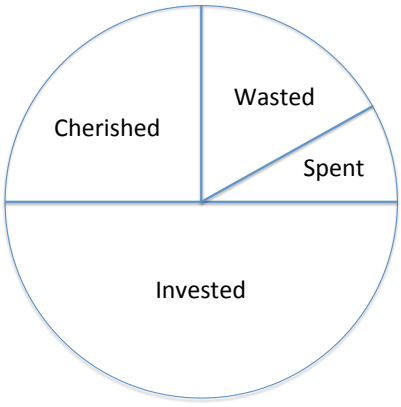

Fig. 2. High-performance time model

Effective time utilization decisions make us feel proud and satisfied at the end of the day. Poor time utilization leaves us feeling empty or disconsolate.

These behavioral choices, therefore, explain the life difference between being "busy" and being "productive." A forward-thinking future society will strive to build an environment that enables its inhabitants to maximize desired time use (Invest and Cherish) while minimizing behaviors with little return (Spent and Wasted).

If we ignore this vital recognition of time use during the design and implementation phases, we will end up with a frustrated collection of technology-driven people whose lives are unfilled.

This approach is vital because the manifestation of hollow existences can be found in global daily headlines of violence lashed upon the innocent, perpetrated by broken people. Feelings of frustration drive irrational behaviors. In a world of instant notoriety, feeding negativity serves no one a positive result.

When we map the changing behaviors in Table 1 and Table 2 (what we are doing more of and less of) virtually all impact the time-use pie negatively. They create a larger "waste" or "spend" slice of pie. The ramifications, of course, are enormous.

Because the pie is finite in size, if the Waste and Spend slices increase, the two we prefer to nurture—Invest and Cherish—must decrease. The art of future design must incorporate the strategic management of the two categories we want to nurture while minimizing the pair we do not.

6 How Behavioral Change Influence Happiness

While it is easy and convenient for the unknowing to say happiness is a choice, happiness is an emotional conclusion drawn from a collection of positive thoughts. Teaching or protecting it comes involves three coachable steps:

- Cognitive awareness that happiness is attainable, worth pursuing, protectable, and sustainable.
- Providing tools—tangible and intangible—to create a positive environment that helps enable a desired, happy conclusion.
- Influencing lives and societies to maximize time choices that enable people to invest and cherish as much time as possible, while minimizing the nonproductive time they might otherwise waste or spend.

When we embrace the realities of technology's negative behavioral impact, we are able to design a future environment to orchestrate a more positive, encouraging, and fulfilling series of daily interactions.

7 Discussing Behavior Changes and Maslow's Hierarchy

7.1 The Facebook Effect

Mark Zuckerberg changed the world by creating an easy tool with a very simple objective: allow people to boost their self-image and self-esteem [4]. This simple enabler is the reason for Facebook's (facebook.com) remarkable global relevance, power, and influence: People want to be seen, heard, loved, and respected. Facebook works because Facebook ticks every box; it is the global gateway, the self-administered

antidote to the surrounding world's frustrations—many of which we have detailed in Tables 1 and 2.

7.2 Decreasing Behaviors and Maslow's Hierarchy of Needs

When we map our previous list of Table 2's fourteen Decreasing Behaviors against Maslow's Hierarchy of Needs [6-7], here is what is threatened (Table 3).

Table 3. MAPPING DECREASING BEHAVIORS AGAINST MASLOW'S HIERARCHY OF NEEDS

MASLOW'S LEVEL	DECREASING BEHAVIORS
Physiology	Privacy
Comfort	Sleep (quality, quantity, and REM)
	Ability to effectively manage the crowded mind's Worry Circle
	Fitness (physical and emotional)
Acceptance, Love, and Belonging	Patience
Respect	Self-awareness
	Attention spans
	Manners
	Communication skills: handwriting, grammar, spelling, punctuation, etc.
	Business maturity
	Critical thinking (managing by fact)
	Accountability
Self-actualization	Wisdom
	Feeling of productive, happy daily achievement
	Deep uninterrupted, reflective thought

8 Concluding with the Maslow/Facebook Correlation

As Facebook has so remarkably demonstrated—it now has 1.4 billion users communicating in 70 languages, with participation rising 12 percent year-over-year—the need to feed and replenish feelings diminished by the aforementioned changing behaviors seems insatiable.

As three-fourths of Facebook users are from outside the United States, the needs the site is filling are globally relevant. Nearly half of all users log in ever day, and spend nearly 20 minutes online, for a simple reason: They seek these reaffirmations during the normal course of daily living.

To underscore the impact of technology as it relates to both Facebook and Maslow's Hierarchy, it is vital to note that *eight of Table 2's fourteen Decreasing Behaviors fall directly into the appeal of Facebook's wheelhouse*.

Forward-thinking society-shapers must strive to emulate the Facebook Effect in design and execution. This will be maximized through positive interaction, which will fuel Maslow's two key levels, Level 3 (*Acceptance, Love, and Belonging*) and Level 4 (*Respect*).

The challenges—and opportunities—are right there in front of us. Whether we are designing a community of the future, shaping behaviors within that community, or simply deciding to be a positive force in the universe, each of us is fully empowered to provide relentless boosts in the lives of others—a design solution we must embrace.

References

1. Berdichevsky, D., & Neuenschwander, E. (1999). Toward an ethics of persuasive technology. *Communications of the ACM*, *42*(5), 51-58.
2. Commoner, B. (2014). The closing circle: nature, man, and technology. Knopf.
3. Fogg, B.J.: Persuasive Technology: Using Computers to Change What We Think and Do. San Francisco: Morgan Kaufmann (2003)
4. Kirkpatrick, D. (2011). The Facebook effect: The inside story of the company that is connecting the world. Simon and Schuster.
5. Marcus, A. (2015). The Happiness Machine: Combining Information Design/Visualization with Persuasion Design to Change Behavior. In *Mobile Persuasion Design* (pp. 539-604). Springer London.
6. Maslow, A. H. (1943). A theory of human motivation. *Psychological review*,*50*(4), 370.
7. McLeod, S. (2007). Maslow's hierarchy of needs. Simply Psychology, 1.
8. Palmer, O. (2009). Managing the Worry Circle. Airplane Reader Publishing Company. First edition.
9. Postman, N. (2011). Technopoly: The surrender of culture to technology. Vintage.
10. Surowiecki, J. (2005). REVIEWS-Technology and Happiness-Why getting more gadgets won't necessarily increase our well-being. *Technology Review-Palm Coast*, *108*(1), 72-77.