

Technology's Fruit of the Spirit

EconFaithAI | May 2026

Technology is growing in capability, rapidly — but is it fruitful? It seems there's a reality of two worlds: one of material abundance, but one of inner longing. For many, there is a crisis of fruitfulness — love, joy, peace, patience, kindness, goodness, gentleness, faithfulness, self-control. Is it possible that technology is either positively or negatively contributing to this trend?

EXECUTIVE SUMMARY

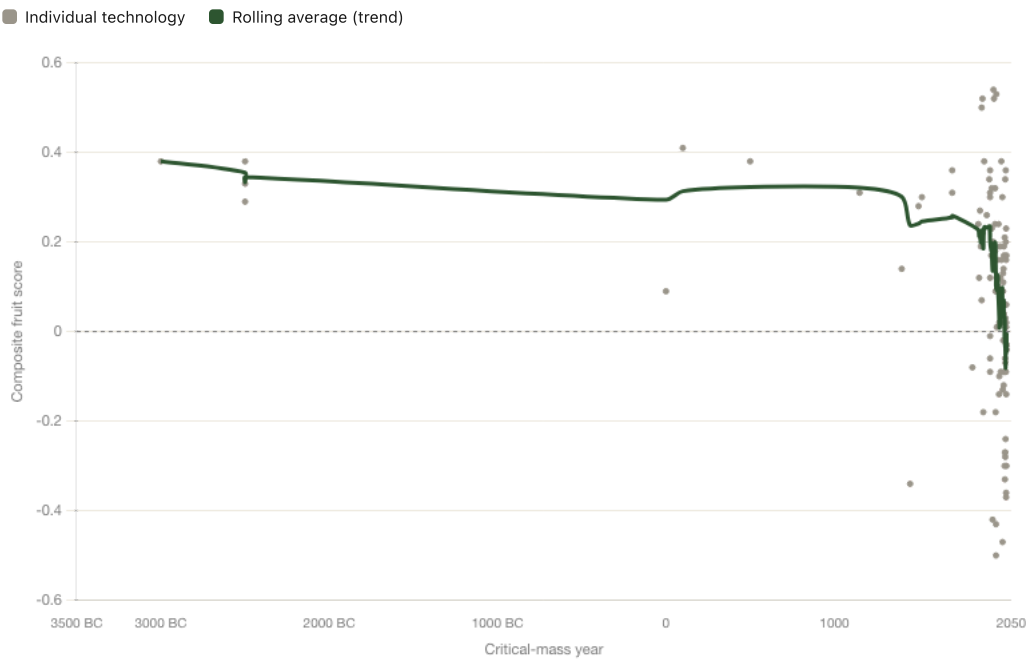
Summary

For most of human history, technology was net-fruitful. Its tools tended to enrich human life along axes that extended well beyond material output — making hard work lighter, removing disease, connecting communities, opening worlds. Sometime in the mid-twentieth century, that thousands-of-year trend began to bend the other way. By the early 2010s it had crossed below zero for the first time in the historical record. Today, on average, a new consumer technology entering the world subtracts from human fruitfulness even as it adds to abundance.

"Fruitfulness," in the older sense the title borrows, names what the New Testament calls the fruit of the Spirit: love, joy, peace, patience, kindness, goodness, faithfulness, gentleness, self-control. Things no one says they want less of. The scriptural mandate is to be fruitful *and* multiply, in that order. This piece is about what happens to a civilization that gets very good at the second half and stops noticing the first.

Technology's Fruit of the Spirit

3000BC to 2020AD. Individual points represent specific technologies and trendline is rolling average.



HEADLINE FINDINGS

For eight thousand years, technology cultivated the fruits. From the plow to the printing press to the polio vaccine, the dominant tools of each era acted on the world rather than on the human soul — and their net effect on inner life was, on average, positive.

In the early 2010s, that flipped. Engagement-optimized digital platforms pulled the rolling average below zero for the first time in the historical record. It has not recovered.

Today, on average, technology is net negative for fruitfulness. This is an average, not a verdict on every tool — plenty of recent technologies are still net-positive (vaccines, MRI, solar, video calling for genuine connection). But the typical new consumer technology entering the world now *adds to abundance and subtracts from fruit*. The two outputs have come apart.

Self-control, patience, and faithfulness took the hardest hits. Not by accident: these are precisely the capacities the new platforms are economically designed to defeat.

Deception is at all-time highs. For most of history, falsehood was rare and slow. Today's tools can manufacture and distribute it at a scale and fidelity that were physically impossible a generation ago.

SECTION 1

Be Fruitful and Multiply

Something has come unstuck. By the measures we trust most — GDP per capita, life expectancy, poverty rates, global connectivity — the last two centuries have been the most extraordinary stretch in human history. We are richer, longer-lived, and more connected than any civilization that has ever existed. And yet roughly **40% of American adults** now report some kind of problem with their inner life: anxiety, loneliness, lost meaning, something missing they cannot name. The two facts sit next to each other and refuse to resolve.

This is the K-shaped world. One line of the K rises sharply — material abundance, output, throughput, scale. The other falls — attention, trust, relationship, the inward life. We have built a civilization that is unprecedented at producing the first and, apparently, structurally unable to keep the second from sliding.

The question of what counts as *good* is older than any of our metrics. From Aristotle's *eudaimonia* to the Hebrew *shalom*, the older traditions never separated material flourishing from the inner condition of the people doing the flourishing. Their answers differ. Their assumption is the same: a life can be wealthy and still go wrong.

One of those older answers is the one this project borrows from. The ancient mandate is to be *fruitful and multiply*. Not just to multiply — fruitful first. The distinction is the whole argument. Multiplying is scale, output, abundance — the upper line of the K. Fruitfulness is the quality of what grows — the lower line, the one no one is watching. A civilization can be very good at the first while quietly losing the second. Ours appears to be.

The texts that hand down that mandate also name what fruitfulness looks like: **love, joy, peace, patience, kindness, goodness, faithfulness, gentleness, self-control**. Near-universal virtues — I've never heard anyone say they wanted less of any of them. They describe human flourishing both inwardly and between people, and they have largely escaped the attention of the economists, technologists, and policymakers who decide what gets built. The lower line of the K may be lower precisely because no one is measuring it.

SECTION 2

We Optimize for What Gets Measured

What gets measured gets managed. The corollary is just as true, and quieter: what doesn't get measured doesn't get managed, and in time stops getting noticed at all. The things that matter most for human flourishing — whether a person is patient, whether a community is faithful, whether a child can sit still long enough to be bored — sit almost entirely outside our instruments. We optimize past them without ever knowing.

A civilization that can track GDP to the decimal point but cannot tell you whether its people are becoming more loving will, predictably, end up with more decimal-point precision and less love. The numbers we have shape the world we build. The numbers we don't have shape it by their absence.

This piece is an attempt to start filling that absence. For each major technology in the historical record, it asks one question: did the tool tend to cultivate these fruits in those who used it, or did it tend to erode them? The result is a composite index across roughly eight thousand years — imperfect, transparent about its assumptions, and designed to be challenged. The point is not to stop technological progress. The point is to widen what we count as progress.

SECTION 3

The Inflection Point

For thousands of years, technology was net fruitful. From the plow to the printing press, from sanitation to the steam engine, the dominant tools of each era acted on the world rather than on the user. They made hard work lighter, removed disease, extended life, connected communities. Their effects on the inner life were incidental, and mostly positive. The rolling-average composite held above zero from the earliest agricultural technologies through the early 2000s.

In the mid-twentieth century, something began to change. As the industrial age gave way to the information age, consumer electronics — radio, television — registered the first real negative readings at scale. Passive consumption began to displace active formation. Attention became a commodity. The trend was gradual at first; the direction was new.

There is a second shift worth naming. For most of that history, technology was transparent. There is little to be surprised about with a tank or a steam engine — they are big, loud, heavy. Their purpose and their consequences are visible. Today's technology is of a different kind. A recommendation algorithm shapes what you see, believe, and want with no physical presence and no obvious mechanism to inspect. The opacity creates new opportunities for influence — and, as Section 4 takes up, for deception.

Between 2007 and 2020, the technologies reaching critical-mass adoption were almost entirely digital platforms optimized for engagement. Each scored sharply negative on the composite. Their combined weight pulled the rolling average below zero, where it has remained.

YEAR	TECHNOLOGY	COMPOSITE	DECEPTION
2009	YouTube	-0.09	0.5
2011	Facebook / Social Media	-0.30	0.6
2013	Twitter / X	-0.33	0.6
2013	Smartphone (iPhone)	-0.27	0.3
2015	Instagram	-0.28	0.6
2016	Snapchat	-0.27	0.5
2017	Tinder / Dating Apps	-0.24	0.4
2020	TikTok	-0.36	0.5
2022	Deepfake Technology	-0.30	0.9

These are not weapons of war. They are not poisons. Most of them are, taken alone, useful for something. Facebook connects long-distance families. YouTube teaches skills. The smartphone is a real productivity tool. And yet each carries a structural feature almost nothing in the prior inventory did: **each is optimized for engagement** — which means each is, by design, optimized to defeat the user's self-control. Several are also optimized to compress attention, which is to say optimized to defeat patience. The aggregate of a generation of such tools is the trajectory in the chart above.

The defining feature of the 2010s digital technology cohort is that each one was optimized to defeat exactly the fruits of the Spirit that hold formation together: self-control, patience, and faithfulness to truth.

The pattern shows up elsewhere in the EconFaithAI work. Algorithmic feeds now hold roughly 40% of the formative-influence share among American children. The religious composition of the workforce building these systems diverges sharply from the population they shape. And the systems themselves crossed human-average IQ in 2025 and now operate at gifted level. The fruits are being eroded by tools that are increasingly intelligent, increasingly influential on the young, and built by a population whose convictions about what makes a good life are not, on the whole, the same as the population's they are forming.

SECTION 4

The Pattern Inside the Pattern

Inside the larger fruitfulness trend sits a second pattern, running on its own logic. The Deception score is tracked separately from the composite because a technology can score well on love, joy, and kindness while still expanding the human capacity to lie. Photography is a case in point: it preserves memory and cultivates joy, and it also makes the visual record something that can be doctored. The two effects coexist in the same tool.

Deception Score of Technology by Critical-Mass Year

Higher values = greater capacity to enable misrepresentation, manipulation, or false impression. Note the dramatic post-2000 ascent.



For most of human history, deception sat near zero. The printing press (1520) was the first real move — falsehood could now be mass-produced and distributed faster than refutation could chase it down (0.3 on the scale). Photography (1890) added another 0.3. Film and radio in the 1920s and '30s landed at 0.4 each, in time for the propaganda era to make use of them. Television: 0.5. The World Wide Web (2000): 0.6. Social media platforms across the 2010s clustered at 0.5–0.6. Deepfake technology (2022) scores **0.9** — the highest single-technology reading in the inventory.

The rolling-average Deception score climbed from roughly 0 in 1900 to **0.37 in 2024**. We are living, statistically and in the felt texture of daily life, through the deception-rich phase of human technological history. For most of the past, a person could mostly trust their own eyes. For most of the future this article can foresee, they will not be able to.

SECTION 5

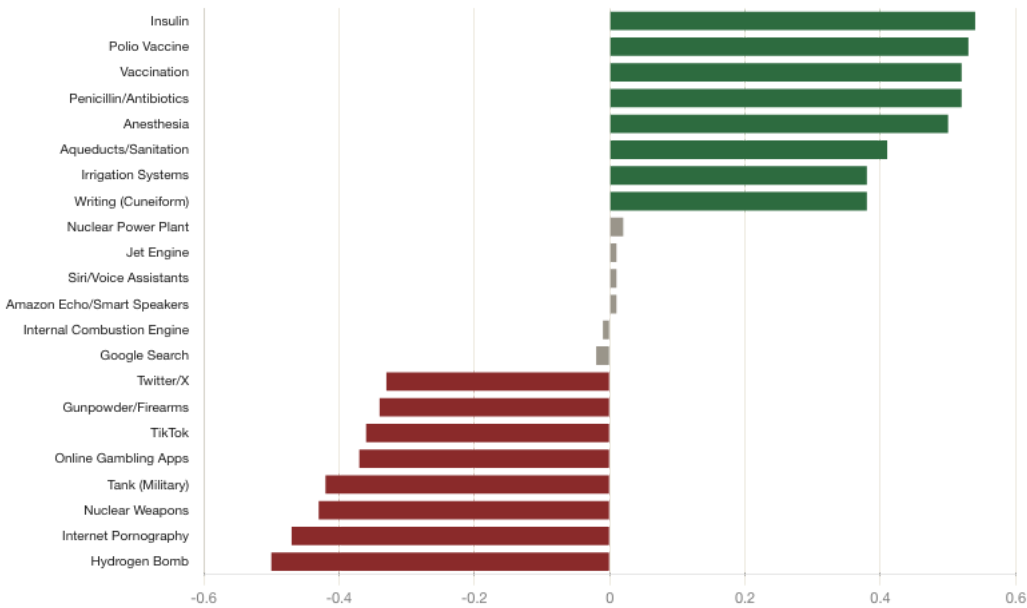
Exploring the Data

Individual Structure

The pattern is striking, and once you see it, hard to unsee. The most fruitful technologies (composite +0.34 to +0.54) tend to either *reduce suffering* (vaccines, anesthesia, antibiotics, insulin, MRI) or *multiply basic capability* (sanitation, paper, the microscope, solar). The least fruitful (–0.27 to –0.50) tend to be built either for *mass killing* (nuclear weapons, the hydrogen bomb, the tank) or for *engagement at any cost* (TikTok, internet pornography, online gambling, the major social media platforms, Twitter, the smartphone). The modern engagement cluster scores in roughly the same range as twentieth-century weapons of war — which is a sentence worth pausing on.

The full range — best, neutral, worst technologies

A side-by-side view of the highest, middle, and lowest composite scores across the inventory. Green bars cultivate fruit; grey bars are neutral; red bars erode it. The distance from top to bottom is the full range the methodology produces.



Examining Individual Fruits

The composite score is the unweighted mean of nine. Each fruit also has its own trajectory across the eight-thousand-year inventory. The same broad pattern — net-positive for millennia, crossing below zero in the early 2010s — shows up in most, but the depth and timing of the post-2010 dip differs sharply by fruit.



Each mini chart shows the rolling average for one fruit across the timeline. Dashed line is zero. **Self-control and patience** show the steepest modern dips; **kindness and goodness** stay closer to zero in recent years.

- **Self-control and patience** are the two fruits most damaged by modern digital technology. This makes intuitive sense — engagement-optimized platforms are designed to defeat self-control and to compress patience. Both are essential virtues for relationships, work, and spiritual formation; both are being structurally undermined.
- **Faithfulness** (trustworthiness, fidelity to truth) is also under sustained pressure — consistent with the Deception trajectory in Section 4. The deepfake/GenAI era especially threatens this.

Explore the Full Table

Each of the 124 technologies in the inventory is listed below with its composite score, deception score, and nine individual fruit scores. Cells are color-coded by sign (green = cultivates the fruit, red = erodes it, grey = neutral). Type into the search box to filter; click any column header to sort.

YEAR ▼	TECHNOLOGY	COMPOSITE	DECEPTION	LOVE	JOY	PEACE	PATIENCE	KINDNESS	GOODNESS	FAITHFULNESS	GENTLENESS	SELF-CONTROL
2024	Oculus VR	-0.04	0.30	-0.07	+0.09	-0.11	-0.07	+0.03	+0.01	-0.05	-0.08	-0.14
2023	Generative AI (ChatGPT)	-0.03	0.60	+0.03	+0.01	-0.02	-0.13	+0.00	+0.03	-0.06	+0.01	-0.11
2023	DALL-E/ AI Image Gen	-0.03	0.70	-0.03	+0.06	-0.08	-0.08	+0.05	+0.08	-0.01	-0.05	-0.17
2022	Tesla Electric Car	+0.17	0.10	+0.24	+0.22	+0.21	+0.11	+0.21	+0.19	+0.13	+0.18	+0.06
2022	Deepfake Technology	-0.30	0.90	-0.26	-0.28	-0.31	-0.42	-0.29	-0.26	-0.24	-0.28	-0.40
2021	Bitcoin/Cryptocurrency	-0.14	0.40	-0.09	-0.09	-0.10	-0.18	-0.12	-0.15	-0.18	-0.08	-0.25
2021	Apple Watch/Wearables	+0.06	0.10	+0.10	+0.08	+0.05	-0.06	+0.07	+0.10	+0.12	+0.08	-0.04
2021	AirPods/Wireless Earbuds	+0.02	0.00	+0.04	+0.09	+0.00	-0.07	+0.03	+0.01	+0.06	+0.03	-0.03
2020	Online Gambling Apps	-0.37	0.40	-0.34	-0.29	-0.38	-0.45	-0.35	-0.37	-0.43	-0.35	-0.41
2020	CRISPR Gene Editing	+0.23	0.10	+0.34	+0.24	+0.26	+0.09	+0.31	+0.25	+0.23	+0.22	+0.17
2020	Amazon Echo/Smart Speakers	+0.01	0.30	+0.10	+0.08	-0.06	-0.06	+0.07	+0.10	+0.01	-0.03	-0.15
2020	TikTok	-0.36	0.50	-0.32	-0.34	-0.37	-0.48	-0.35	-0.32	-0.30	-0.34	-0.46
2020	Video Conferencing (Zoom)	+0.16	0.10	+0.21	+0.17	+0.18	+0.08	+0.18	+0.15	+0.16	+0.17	+0.15
2019	Facial Recognition	-0.09	0.30	-0.07	-0.09	-0.08	-0.10	-0.13	-0.10	-0.08	-0.09	-0.04
2018	Human Genome Mapping	+0.36	0.10	+0.49	+0.39	+0.41	+0.24	+0.46	+0.40	+0.27	+0.37	+0.21
2018	Podcasts	+0.20	0.30	+0.22	+0.27	+0.18	+0.11	+0.21	+0.19	+0.24	+0.21	+0.15
2018	Siri/Voice Assistants	+0.01	0.20	+0.07	+0.05	+0.02	-0.09	+0.04	+0.07	-0.02	+0.05	-0.07
2017	Tinder/Dating Apps	-0.24	0.40	-0.24	-0.15	-0.29	-0.29	-0.16	-0.13	-0.22	-0.26	-0.38
2016	Streaming Services	-0.07	0.10	-0.02	+0.03	-0.06	-0.13	-0.03	-0.05	-0.11	-0.03	-0.20
2016	Uber/Ride-sharing	+0.06	0.10	+0.14	+0.12	+0.00	+0.01	+0.11	+0.09	+0.03	+0.08	-0.04
2016	Drone (Consumer)	+0.03	0.20	+0.02	+0.11	-0.01	+0.00	+0.10	+0.08	+0.02	-0.04	-0.05
2016	Snapchat	-0.27	0.50	-0.21	-0.23	-0.26	-0.37	-0.24	-0.21	-0.30	-0.23	-0.35
2015	Solar Panel	+0.34	0.00	+0.34	+0.33	+0.36	+0.31	+0.34	+0.34	+0.37	+0.33	+0.35
2015	Instagram	-0.28	0.60	-0.20	-0.22	-0.36	-0.36	-0.23	-0.20	-0.29	-0.22	-0.45
2014	iPad/Tablet	-0.06	0.10	-0.02	-0.04	-0.07	-0.18	-0.05	-0.02	+0.00	-0.04	-0.16
2013	Twitter/X	-0.33	0.60	-0.27	-0.29	-0.32	-0.43	-0.30	-0.27	-0.36	-0.29	-0.41
2013	Smartphone (iPhone)	-0.27	0.30	-0.23	-0.25	-0.28	-0.39	-0.26	-0.23	-0.21	-0.25	-0.37
2013	App Store	-0.09	0.20	-0.09	+0.00	-0.14	-0.14	-0.01	+0.02	-0.07	-0.11	-0.23

YEAR ▼	TECHNOLOGY	COMPOSITE	DECEPTION	LOVE	JOY	PEACE	PATIENCE	KINDNESS	GOODNESS	FAITHFULNESS	GENTLENESS	SELF-CONTROL
2012	Kindle/E-Reader	+0.21	0.00	+0.18	+0.34	+0.14	+0.18	+0.28	+0.26	+0.20	+0.17	+0.11
2011	Facebook/Social Media	-0.30	0.60	-0.30	-0.21	-0.35	-0.35	-0.22	-0.19	-0.28	-0.32	-0.44
2010	Cloning (Dolly)	+0.02	0.10	-0.04	+0.06	-0.02	+0.07	+0.04	+0.10	+0.04	-0.05	+0.00
2010	Wi-Fi	+0.03	0.10	+0.03	+0.10	+0.00	+0.01	+0.11	+0.08	-0.02	-0.01	-0.03
2009	YouTube	-0.09	0.50	-0.04	+0.01	-0.08	-0.15	-0.05	-0.07	-0.13	-0.05	-0.22
2007	GPS Navigation	+0.17	0.10	+0.18	+0.16	+0.20	+0.13	+0.15	+0.16	+0.23	+0.17	+0.19
2007	Wikipedia	+0.19	0.20	+0.20	+0.20	+0.20	+0.12	+0.19	+0.22	+0.21	+0.21	+0.18
2007	iTunes/Digital Music	+0.04	0.00	+0.03	+0.08	-0.01	+0.03	+0.13	+0.11	+0.05	+0.02	-0.04
2006	Online Gaming (MMO)	-0.12	0.20	-0.15	+0.01	-0.19	-0.15	-0.05	-0.07	-0.13	-0.16	-0.22
2005	GMO Crops	+0.14	0.20	+0.10	+0.07	+0.11	+0.23	+0.20	+0.23	+0.12	+0.08	+0.12
2003	DVD	+0.11	0.00	+0.08	+0.24	+0.04	+0.08	+0.18	+0.16	+0.10	+0.07	+0.01
2003	Google Search	-0.02	0.30	-0.06	+0.05	-0.06	-0.03	+0.04	+0.07	-0.05	-0.05	-0.08
2002	Mobile Phone	+0.09	0.10	+0.14	+0.10	+0.11	+0.01	+0.11	+0.08	+0.09	+0.10	+0.08
2002	Lithium Battery	+0.13	0.00	+0.08	+0.18	+0.10	+0.16	+0.19	+0.19	+0.11	+0.07	+0.09
2000	World Wide Web	-0.13	0.60	-0.12	-0.12	-0.12	-0.20	-0.13	-0.10	-0.11	-0.11	-0.14
1999	Internet Pornography	-0.47	0.30	-0.48	-0.43	-0.52	-0.48	-0.38	-0.40	-0.46	-0.49	-0.55
1998	CCTV/Surveillance	+0.03	0.20	+0.00	+0.09	-0.01	+0.08	+0.05	+0.08	-0.01	-0.02	+0.03
1998	Personal Computer	+0.09	0.20	+0.06	+0.06	+0.06	+0.09	+0.16	+0.19	+0.07	+0.07	+0.04
1998	DNA Fingerprinting	+0.30	0.00	+0.31	+0.30	+0.33	+0.31	+0.28	+0.34	+0.28	+0.30	+0.24
1992	MRI Scanner	+0.38	0.00	+0.50	+0.40	+0.42	+0.25	+0.47	+0.41	+0.28	+0.38	+0.33
1992	CD (Compact Disc)	+0.16	0.00	+0.18	+0.23	+0.14	+0.07	+0.17	+0.15	+0.20	+0.17	+0.11
1988	Video Games (Pong)	-0.09	0.10	-0.04	+0.01	-0.08	-0.15	-0.05	-0.07	-0.13	-0.05	-0.22
1986	Microwave Oven	+0.12	0.00	+0.09	+0.18	+0.11	+0.17	+0.17	+0.15	+0.09	+0.07	+0.07
1985	Satellite Communication	+0.19	0.10	+0.25	+0.21	+0.22	+0.12	+0.22	+0.19	+0.09	+0.21	+0.19
1985	Walkman	+0.07	0.00	+0.09	+0.14	+0.05	-0.02	+0.08	+0.06	+0.11	+0.08	+0.02
1980	Nuclear Fission	-0.10	0.20	-0.15	-0.05	-0.13	-0.07	-0.04	-0.04	-0.12	-0.16	-0.14
1980	Nuclear Power Plant	+0.02	0.20	-0.03	+0.07	-0.01	+0.05	+0.08	+0.08	+0.00	-0.04	-0.02
1978	Credit Card	-0.14	0.20	-0.10	-0.10	-0.11	-0.19	-0.13	-0.16	-0.19	-0.09	-0.15
1975	Dishwasher	+0.24	0.00	+0.26	+0.24	+0.28	+0.23	+0.23	+0.21	+0.26	+0.24	+0.24
1972	Integrated Circuit	+0.10	0.00	+0.06	+0.17	+0.06	+0.09	+0.16	+0.19	+0.07	+0.07	+0.04
1972	Contraceptive Pill	+0.10	0.00	+0.21	+0.11	+0.13	-0.04	+0.18	+0.12	+0.10	+0.09	+0.04
1970	Air Conditioning	+0.16	0.00	+0.19	+0.17	+0.21	+0.16	+0.16	+0.14	+0.08	+0.17	+0.17
1968	Electronic Computer	+0.10	0.20	+0.11	+0.11	+0.11	+0.03	+0.10	+0.13	+0.12	+0.12	+0.09
1965	Jet Engine	+0.01	0.00	+0.10	+0.08	-0.04	-0.03	+0.07	+0.05	-0.01	-0.07	-0.08
1963	Transistor	+0.12	0.00	+0.13	+0.13	+0.13	+0.05	+0.12	+0.15	+0.14	+0.14	+0.11
1962	Polio Vaccine	+0.53	0.00	+0.59	+0.60	+0.51	+0.45	+0.67	+0.61	+0.48	+0.47	+0.42
1960	Nuclear Weapons	-0.43	0.30	-0.47	-0.39	-0.55	-0.35	-0.45	-0.45	-0.38	-0.46	-0.37

YEAR ▼	TECHNOLOGY	COMPOSITE	DECEPTION	LOVE	JOY	PEACE	PATIENCE	KINDNESS	GOODNESS	FAITHFULNESS	GENTLENESS	SELF-CONTROL
1520	Printing Press	+0.30	0.30	+0.30	+0.37	+0.27	+0.28	+0.38	+0.35	+0.25	+0.26	+0.24
1500	Mechanical Clock	+0.28	0.00	+0.28	+0.27	+0.30	+0.28	+0.25	+0.31	+0.25	+0.27	+0.32
1450	Gunpowder/Firearms	-0.34	0.10	-0.45	-0.26	-0.53	-0.22	-0.32	-0.32	-0.25	-0.44	-0.24
1400	Compass	+0.14	0.00	+0.15	+0.13	+0.17	+0.10	+0.12	+0.13	+0.20	+0.14	+0.16
1150	Windmill	+0.31	0.00	+0.32	+0.31	+0.34	+0.29	+0.32	+0.32	+0.24	+0.31	+0.33
500	Paper	+0.38	0.20	+0.43	+0.39	+0.40	+0.30	+0.40	+0.37	+0.38	+0.39	+0.37
100	Aqueducts/Sanitation	+0.41	0.00	+0.42	+0.38	+0.44	+0.37	+0.44	+0.42	+0.44	+0.38	+0.40
0	Iron Smelting	+0.09	0.00	+0.12	+0.10	+0.03	+0.09	+0.11	+0.14	+0.06	+0.13	+0.04
2500 BC	Plow	+0.33	0.00	+0.33	+0.30	+0.34	+0.35	+0.32	+0.35	+0.35	+0.31	+0.35
2500 BC	Wheel	+0.29	0.00	+0.37	+0.35	+0.23	+0.24	+0.34	+0.32	+0.26	+0.31	+0.19
2500 BC	Writing (Cuneiform)	+0.38	0.20	+0.38	+0.45	+0.35	+0.36	+0.46	+0.43	+0.33	+0.34	+0.32
3000 BC	Irrigation Systems	+0.38	0.00	+0.33	+0.41	+0.34	+0.46	+0.43	+0.46	+0.35	+0.31	+0.35

SECTION 6

Conclusion and What We Should Do

The data tells a coherent story. For most of human history, technology cultivated the fruits as a kind of side effect — not because the engineers were virtuous, but because the dominant tools acted on the world rather than on the human soul. The plow does not care what you scroll past at dinner. The printing press has no opinion about your patience. The fruits were safe because the tools were not aimed at them.

That changed with the advent of engagement-optimized platforms, whose entire economic logic depends on defeating the capacities that hold a person together: self-control, patience, faithfulness to truth. The trajectory began to bend in the 1950s. It crossed below zero in the early 2010s. It has not recovered.

What should we do about it? The first move is the one this project exists to make: measure what matters. If we only optimize for what we can count — clicks, time-on-app, GDP — we will keep building a world of abundance without fruitfulness. Making the invisible visible is a precondition. The harder work begins after. That work runs on three layers at once.

In personal life, the move is to put the engagement-optimized tools back in their place — to use them, sparingly and with intent, rather than letting them use us. A phone in another room is a small repair to attention. A meal without a screen is a small repair to patience. A sabbath from the feed is a larger one. The fruits return through practice, not through declaration.

In design, the move is for the people building these systems to take seriously that the question is no longer only whether a product *works* — it is whether it *forms* its users in a direction they would, on reflection, endorse. Every product is a formation program. The only question is what it is forming people into.

In institutions, the move is to extend the kind of accountability we already apply to food, drugs, and finance to the technologies that now shape attention, belief, and relationship at population scale. We label calories. We disclose risk. We can require something analogous of the systems forming the inner lives of children.

Technology can be fruitful. It has been before. The first plow, the first written word, the first vaccine, the first telephone line laid between two distant towns — each was, in its way, an act of love at scale. There is no reason in principle that the next generation of tools cannot be the same. The question is whether the people building them, and the people using them, and the institutions surrounding them, will insist on it.

The fruits did not survive eight thousand years because they were optional. They survived because, in the end, they are the things by which a life is recognized — by the person living it, and by everyone else. A civilization that loses them does not lose them quickly or all at once. It loses them in a long, gradual, measurable curve. We are far enough along that curve to see it. We are still early enough to bend it.

The fruits return through practice, not through declaration. A phone in another room is a small repair to attention. A meal without a screen is a small repair to patience. The resources below help families build the household conditions in which those repairs become routine.

Wait Until 8th

A parent pledge movement to delay smartphone access until at least 8th grade. Coordinates community-level commitment so no single family has to go it alone.

The Anxious Generation — Parent Resources

Jonathan Haidt's companion site to the book. Includes age-by-age guides, school toolkits, and the "four norms" framework for community-level phone norms.

Common Sense Media — Screen Time

Research-backed age recommendations, app reviews, and family media agreements. Largest independent source of child-focused media ratings.

Screen Sanity

Christian-informed media literacy curriculum designed for families. Equips parents and teens to examine the values embedded in digital platforms.

TechWise Family

Andy Crouch's framework for families. Grounds technology decisions in a theology of embodiment and presence rather than just harm-avoidance.

No individual user can outwork a business model. The fruitfulness deficit is structural — and structural problems require structural responses. The resources below cover the policy frontier where platform accountability is being redrawn.

Kids Online Safety Act (KOSA)

Federal legislation requiring platforms to apply a duty of care to minors. Tracks legislative progress and provides materials for constituent engagement.

UK Age Appropriate Design Code

The most comprehensive child-protective design standard currently in force. A practical benchmark for what platform-level obligations to minors can look like.

Center for Humane Technology

Tristan Harris's policy and advocacy organization. Publishes the "Ledger of Harms," runs the Your Undivided Attention podcast, and briefs legislators on engagement-optimization harms.

Data & Society — Youth & Media

Independent research on how platforms shape adolescent identity, political formation, and epistemic environments. Rigorous academic work aimed at policymakers.

APA Health Advisory on Adolescent Social Media Use

The American Psychological Association's official recommendations — the closest thing to an authoritative clinical consensus on the question of social media and child development.

Every product is a formation program. The question is what it is forming people into. The resources below help engineers and product teams take that question seriously inside the design loop, not after the fact.

Humane Technology Design Guide

Practical design patterns for building products that respect attention, reduce addictive loops, and give users meaningful agency. A checklist for engineering and product teams.

Design Ethically

Resources and frameworks for UX and product designers navigating dark patterns, persuasive design, and the ethics of engagement-optimized systems.

Partnership on AI — Children & AI

Multi-stakeholder research on responsible AI design for younger users. Includes case studies and emerging standards from across the industry.

"The Case for a Duty of Care in the Attention Economy"

Stanford Social Innovation Review. Frames the engineering and product design question in terms of professional duty — comparable to the standards applied in medicine and law.

Mozilla Manifesto

A working example of a technology organization that has encoded values — privacy, user agency, open access — into its product and governance structure, not just its marketing.

Capital is upstream of product. Every share of every platform is an instruction: keep doing what you are doing. The investors who change that instruction first will set the standard the rest follow.

Fair Play for Kids — Investor Resources

Organizes shareholder engagement campaigns targeting platform companies on child safety metrics. Provides model shareholder resolutions and engagement frameworks.

PRI — Responsible Investment in the Digital Economy

The UN Principles for Responsible Investment guidance on platform accountability. Frames child safety as a financially material ESG factor for institutional investors.

IFRS Sustainability Standards (formerly SASB)

Industry-specific standards for disclosing material social impacts. The Internet & Media standard covers user privacy, data security, and content governance — increasingly applied to fruitfulness questions.

The Reset Movement

A coalition of parents, researchers, and investors pushing for disclosure standards and accountability metrics for platform impact on user wellbeing.

The church now finds itself in possession of something structurally scarce: formation that is local, intergenerational, relationally accountable, and oriented toward an end that is not engagement. Few institutions can still offer that. The ones that can are not playing a smaller role — they are playing a different one.

Screen Sanity — Church Curriculum

A six-week media literacy and formation curriculum designed for youth groups and family ministries. Grounded in a theological account of attention, identity, and desire.

Fuller Youth Institute — Social Media & Teen Faith

Research and practical resources on how algorithmic media is reshaping adolescent faith formation. Aimed at youth workers and church leaders.

Barna Research — Teens & Technology

Ongoing survey research on how Christian teens engage with digital media and how it intersects with faith, community, and worldview. Useful for benchmarking and program design.

TechWise Family

Andy Crouch's framework for families and churches. Grounds technology decisions in a theology of embodiment and presence rather than just harm-avoidance.

Anxious Generation — Faith Community Resources

Haidt's team has partnered with faith organizations to develop congregation-level implementation guides for phone-free environments and formation alternatives.

APPENDIX A

Methodology

Scores are assigned per-technology, per-fruit, using a combination of empirical research and reasoned interpretation of historical accounts.

Inventory

The inventory contains 124 technologies spanning approximately 8,000 years (irrigation systems in 6000 BC through generative AI in 2024). Selection criteria: the technology must have reached *critical mass* — meaningful adoption among a substantial population — and represent a categorically distinct capability rather than an incremental refinement. Categories include: Agricultural, Communication, Transportation, Manufacturing, Medical, Energy, Information, Entertainment, Digital, Weapons, Domestic, Scientific, Financial, Navigation, Infrastructure, Security.

Scoring

Each technology is scored independently on each of the nine fruits using a **−1.0 to +1.0 scale**, where:

- **+1.0** = the technology strongly cultivates this fruit in its users at population scale
- **0.0** = neutral or mixed; the technology does not systematically affect this fruit
- **−1.0** = the technology strongly erodes this fruit at population scale

The **Composite** for each technology is the unweighted mean of its nine fruit scores. A separate **Deception** score (0.0 to ~1.0) measures the technology's capacity to enable systematic misrepresentation, manipulation, or false impression. Deception is tracked separately because it touches faithfulness specifically but operates as a distinct mechanism.

Anchoring

Where empirical research exists, scores are anchored to that research. Examples: social media's effect on adolescent depression (Surgeon General 2023, Riehm et al. 2019), television's effect on aggression (Paik & Comstock 1994 meta-analysis, $r=.38$), vaccine impact (WHO 2024: 154M lives saved over 50 years), traffic fatalities (WHO 1.35M/yr), screen time and attention (multiple studies referenced in the Source column of the dataset). Where empirical research is thin (especially for ancient technologies), scores are interpretive judgments based on historical accounts.

The **Evidence** column in the dataset marks each row as High, Medium, or Low evidence quality. High-evidence rows have multiple independent studies anchoring the assessment; Low-evidence rows are primarily interpretive.

Trajectory analysis

Each technology is placed on the timeline at its *critical-mass year* — the year of substantial population adoption — rather than its invention year. The **rolling average** of composite and deception scores is computed across consecutive technologies in the timeline. This produces a smooth measure of "what was the prevailing fruitfulness of technology entering the world at this period."

Source data

The full inventory is in *Technology_Scores.csv* and *Technology_Scores.xlsx*. Each row contains:

- **Technology, Category** — name and type
- **Invention Year, Critical Mass Year** — first invention, then year of substantial population adoption
- **Nine fruit scores** — Love, Joy, Peace, Patience, Kindness, Goodness, Faithfulness, Gentleness, Self-Control (each -1 to $+1$)
- **Composite** — unweighted mean of the nine fruits
- **Deception** — separate score 0 to ~ 1
- **Rolling-average composite and deception**
- **Trend, Evidence quality, Sources**

The dataset is open for review, scoring critique, and extension.

APPENDIX B

Limitations and Gaps

Subjective scoring

Each of the $124 \times 9 = 1,116$ individual fruit scores is an interpretive judgment. Where empirical research exists (social media depression studies, vaccine mortality data, traffic fatalities), the scores are anchored to that research; where it does not (especially for technologies pre-1900), they are reasoned interpretations of historical accounts. A different scorer working with the same evidence could produce different numbers. The aggregate pattern across 124 technologies is more robust than any single cell.

Selection bias in the inventory

The inventory includes 124 technologies. Different selection rules — including more, fewer, or different technologies — would produce somewhat different trajectories. The choice to include both "primary" technologies (the wheel, the printing press) and "derivative" technologies (DVD, Snapchat) means the modern era is more densely sampled than the ancient era. This is appropriate to the era's faster pace of invention but it does amplify modern signals in the rolling average.

Critical-mass year choice

The critical-mass year is itself a judgment. Did the smartphone reach critical mass in 2010 (iPhone 4 adoption), 2013 (majority of Americans owning one), or 2015 (smartphone dominance)? The choice affects when each technology appears on the trajectory. The dataset uses 2013 for smartphones — defensible, but contestable.

The composite is unweighted

The composite is the unweighted mean of the nine fruits. A weighted scheme (giving, for example, double weight to love and peace) would produce different aggregate scores. The unweighted choice is defensible (we treat each fruit as equally part of fruitfulness) but it is a choice.

What this report does not claim

- It does not claim every individual user of a low-scoring technology is harmed.
- It does not claim high-scoring technologies have no costs (vaccines have side-effect rates; antibiotics produce resistance; the printing press also enabled propaganda).
- It does not claim the fruits of the Spirit are the only valid frame for evaluating technology (utilitarian and rights-based frames exist and are also valuable).
- It does not claim the trajectory is irreversible. Recent positive-scoring technologies (solar, MRI, CRISPR, Tesla EV, Zoom for legitimate connection) suggest counter-trend examples exist.

What this report does claim

- Under the methodology described, technology was net-positive for the fruits of the Spirit for almost all of human history.
- The composite rolling average crossed below zero in the early 2010s, primarily driven by engagement-optimized digital platforms.
- The Deception rolling average is at all-time highs.
- The fruits most damaged by modern digital technology are self-control, patience, and faithfulness.
- The aggregate pattern is consistent across plausible alternative scoring approaches.

APPENDIX C

References and Source Data

Scripture and theology

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Companion projects

- *The Shaper* at the-shaper — share of formative influence on children, 1900–2025.
- *Concentrations* at concentrations — three lenses on tech-sector concentration.
- *Machine vs. Human Intelligence* companion report — at sibling folder MachineVsHumanIntelligence.
- *Deception Index* at deception — companion deception-only analysis.

APPENDIX D

Project Files

FILE	PURPOSE
REPORT_Fruit_of_Spirit_Tech.html / .pdf	This document.
references/README.md / .pdf	Project overview and file index.
references/Methodology.md / .pdf	Detailed scoring methodology and rationale.
references/Limitations_and_Defensibility.md / .pdf	Standalone limitations document.
references/Technology_Scores.csv / .xlsx	Full 124-technology dataset with all scores and sources.