ELON UNIVERSITY | Imagining the Digital Future Center

EXECUTIVE SUMMARY

Being Human in 2035

How Are We Changing in the Age of AI?

By Janna Anderson and Lee Rainie

April 2025

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The Future of Being Human

How Are We Changing? What Will Life Be Like?

Experts Predict Significant Change in People's Ways of Thinking, Being and Doing as They Adapt to the Age of AI

Many are concerned about how our adoption of AI systems over the next decade will affect essential traits such as empathy, social/emotional intelligence, complex thinking, ability to act independently and sense of purpose. Some have hopes for AIs' influence on humans' curiosity, decision-making and creativity

By Janna Anderson and Lee Rainie
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This document is a briefing of the 286-page full report. Imagining the Digital Future is a non-partisan, public-good research initiative at Elon University focused on the digital revolution's impact and what may lie ahead. This report shares results of our 51st "Future of Digital Life" report. It builds on previous efforts that were jointly conducted by Elon's Imagining the Digital Future Center (previously known as "Imagining the Internet") and Pew Research Center's Internet Project. Experts' predictions reported here came in nonscientific canvassing (based on a nonrandom sample) conducted between Dec. 27, 2024, and Feb. 1, 2025.

Experts Predict Significant Change in People's Ways of Thinking, Being and Doing by 2035 as They Adapt to the Age of AI

A majority of global technology experts say the likely magnitude of change in humans' native capacities and behaviors as they adapt to artificial intelligence (AI) will be "deep and meaningful," or even "dramatic" over the next decade The results are based on a canvassing of a select group of experts between Dec. 27, 2024, and Feb. 1, 2025. Some 301 responded to at least one question in the canvassing.

Nearly 200 of the experts wrote full-length essay responses to a longer qualitative query: *Over the next decade, what is likely to be the impact of AI advances on the experience of being human? How might the expanding interactions between humans and AI affect what many people view today as "core human traits and behaviors?* Their revealing insights are featured on 228 pages of this report directly following the introductory sections. First, here are brief details on the quantitative questions.

The 301 experts who responded to the quantitative questions were asked to predict the impact of change they expect on 12 essential traits and capabilities by 2035. They predicted that change is likely to be mostly negative in the following nine areas:

- social and emotional intelligence
- capacity and willingness to think deeply about complex concepts
- trust in widely shared values and norms
- confidence in their native abilities
- empathy and application of moral judgment
- mental well-being
- sense of agency
- sense of identity and purpose
- metacognition

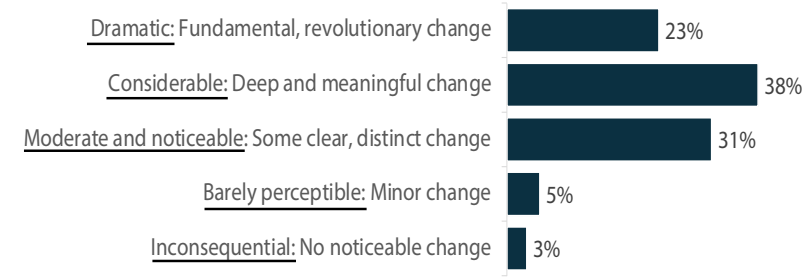
Pluralities said they expect that change for humans in by 2035 will be mostly positive in these areas:

- curiosity and capacity to learn
- decision-making and problem-solving
- innovative thinking and creativity.

They foresee deep, meaningful and even dramatic change ahead in regard to these human traits. They were asked, "What might be the magnitude of overall change in the next decade ... in people's native operating systems and operations – as we more broadly adapt to and use advanced AIs by 2035?" In response, **61% said the change will be deep and meaningful or fundamental and revolutionary.**

A majority of experts believe the magnitude of change on human capacities by 2035 will be deep and meaningful - and then some

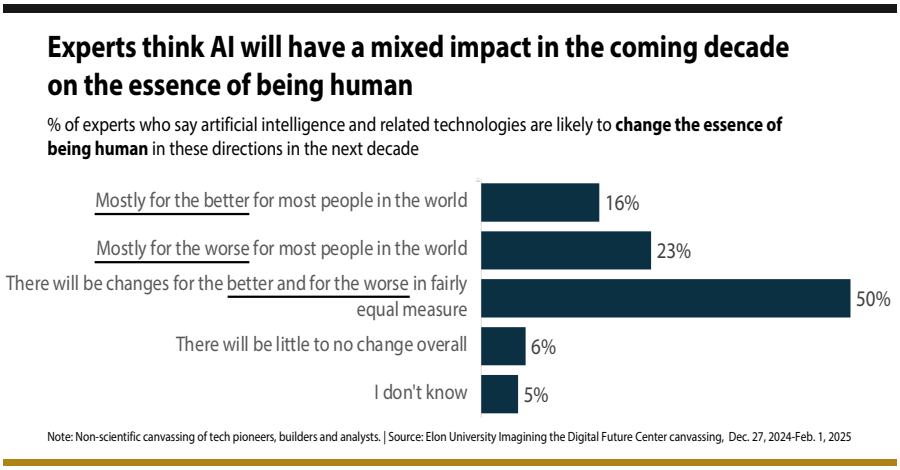
% of experts who say the amount of change in human capacities and behaviors that will occur as advanced AIs are more broadly adopted by 2035



Note: Non-scientific canvassing of tech pioneers, builders and analysts. | Source: Elon University Imagining the Digital Future Center canvassing, Dec. 27, 2024-Feb. 1, 2025

Respondents were also asked about the overall impact of AI on the essence of being human. Specifically, our query related to how much humans' expanding use of AI tools and systems "*might change the essence of being human, the ways individuals act and do not act, what they value, how they live and how they perceive themselves and the world.*"

Some 50% of these experts said they expect the overall impact of change in being human for those adapting to AI is likely to be **for the better *and* for the worse in fairly equal measure.** Only 6% said they expect to see little or no change on the essence of being human by 2035.



Nearly 200 of the experts wrote essay responses on the primary topic: Being human in the Age of AI. An overwhelming majority of those who wrote essays focused their remarks on the potential problems they foresee. While they said the use of AI will be a boon to society in many important – and even vital – regards, most are worried about what they consider to be the fragile future of some foundational and unique traits. At the same time, a plurality of these experts' essays are leavened by glimmers of hope that ever-adaptable humans will find ways to prevail and even flourish.

In all, these experts provide a wide range of predictions and descriptions of what life might be like a decade from now. The following brief excerpts from several experts' essays touch on the likely transformation and challenges they foresee. Additional brief excerpts from various experts' essays will follow through the remainder of this introductory section to the report.

The 228 pages of this report carrying *all of the experts' full-length essays* begin on Page 34.

Nell Watson, president of EURAIO, the European Responsible Artificial Intelligence Office and an AI ethics expert with IEEE, predicted, "By 2035, the integration of AI into daily life will profoundly reshape human experience through increasingly sophisticated supernormal stimuli. … Future AI companions will offer relationships perfectly calibrated to individual psychological needs, potentially overshadowing authentic human connections that require compromise and effort. AI-driven entertainment, virtual worlds and personalized content will provide peak experiences that make unaugmented reality feel dull by comparison. There are many more likely changes that are worrisome. Virtual pets and AI human offspring may offer the emotional rewards of caregiving without the challenges of the real versions. AI romantic partners could provide idealized relationships that make human partnerships seem unnecessarily difficult. Workplace efficiencies risk reducing human agency and capability. AI platforms potentially threaten individual autonomy in financial and social spheres. … The key challenge will be managing the seductive power of AI-driven supernormal stimuli while harnessing their benefits. Without careful development and regulation, these artificial experiences could override natural human drives and relationships, fundamentally altering what it means to be human."

Jerry Michalski, longtime speaker, writer and tech trends analyst, wrote, "Multiple boundaries are going to blur or melt over the next decade, shifting the experience of being human in disconcerting ways: the boundary between reality and fiction … the boundary between human intelligence and other intelligences … the boundary between human creations and synthetic creations … the boundary between skilled practitioners and augmented humans … the boundary between what we think we know and what everyone else knows."

Juan Ortiz Freuler, a Ph.D. candidate at the University of Southern California and co-initiator of the non-aligned tech movement, wrote, "As we move deeper into this era, change may render the very idea of the individual, once a central category of our political and legal systems, increasingly irrelevant, and radically reshape power relations within our societies. The ongoing shift is a profound reordering of the categories that structure human life. The growing integration of predictive models into everyday life is challenging three core concepts of our social structure: identity, autonomy and responsibility. … As AI systems continue to infiltrate various sectors from healthcare to the legal system, decisions about access to services, to opportunities and even to personal freedoms are increasingly made based on data-driven predictions about our behavior, our history and our expected social interactions. These decisions are no longer based on an understanding of individuals as autonomous beings but as myriad data points analyzed, categorized and segmented according to obscure statistical models. The individual, with all the complexity of lived experience, becomes increasingly irrelevant in the face of these algorithms."

Jerome C. Glenn, futurist and executive director and CEO of the Millennium Project, wrote, "If national licensing systems and global governing systems for the transition to Artificial General Intelligence (AGI) are effective before AGI is released on the Internet, then we will begin the self-actualization economy as we move toward the Conscious-Technology Age. If, instead, many forms of AGI are released on the Internet from the U.S., China, Japan, Russia, the UK, Canada, etc., by large corporations and small startups their interactions will give rise to the emergence of many forms of artificial superintelligence (ASI) beyond human control, understanding and awareness.

Dave Edwards, co-founder of the Artificiality Institute wrote: "By 2035, the essential nature of human experience will be transformed … through an unprecedented integration with synthetic systems that create meaning and understanding. ... The evolution of technology from computational tools to cognitive partners marks a significant shift in human-machine relations. ... This transition fundamentally reshapes core human behaviors, from problem-solving to creativity, as our cognitive processes extend beyond biological boundaries to incorporate machine interpretation and understanding."

John M. Smart, a global futurist, foresight consultant, entrepreneur and CEO of Foresight University, wrote, "I fear – for the time being – that while there will be a growing minority benefitting ever more significantly with these tools, most people will continue to give up agency, creativity, decision-making and other vital skills to these still-primitive AIs and the tools will remain too centralized and locked down with interfaces that are simply out of our personal control as citizens. … I fear we're still walking into an adaptive valley in which things continue to get worse before they get better. Looking ahead *past the next decade*, I can imagine a world in which open-source personal AIs (PAIs) are trustworthy and human-centered. Many political reforms will re-empower our middle class and greatly improve rights and autonomy for all humans, whether or not they are going through life with PAIs. I would bet the vast majority of us will consider ourselves joined at the hip to our digital twins once they become useful enough. … I hope we have the courage, vision and discipline to get through this AI valley as quickly and humanely as we can."

Richard Reisman, futurist, consultant and nonresident senior fellow at the Foundation for American Innovation, wrote, “Over the next decade we will be at a tipping point in deciding whether uses of AI as a tool for both individual and social (collective) intelligence augments humanity or de-augments it. We are now being driven in the wrong direction by the dominating power of the ‘tech-industrial complex,’ but we still have a chance to right that. Will our tools for thought and communication serve their individual users and the communities those users belong to and support, or will they serve the tool builders in extracting value from and manipulating those individual users and their communities? … If we do not change direction in the next few years, we may, by 2035, descend into a global sociotechnical dystopia that will drain human generativity and be very hard to escape. If we *do* make the needed changes in direction, we might well, by 2035, be well on the way to a barely imaginable future of increasingly universal enlightenment and human flourishing.”

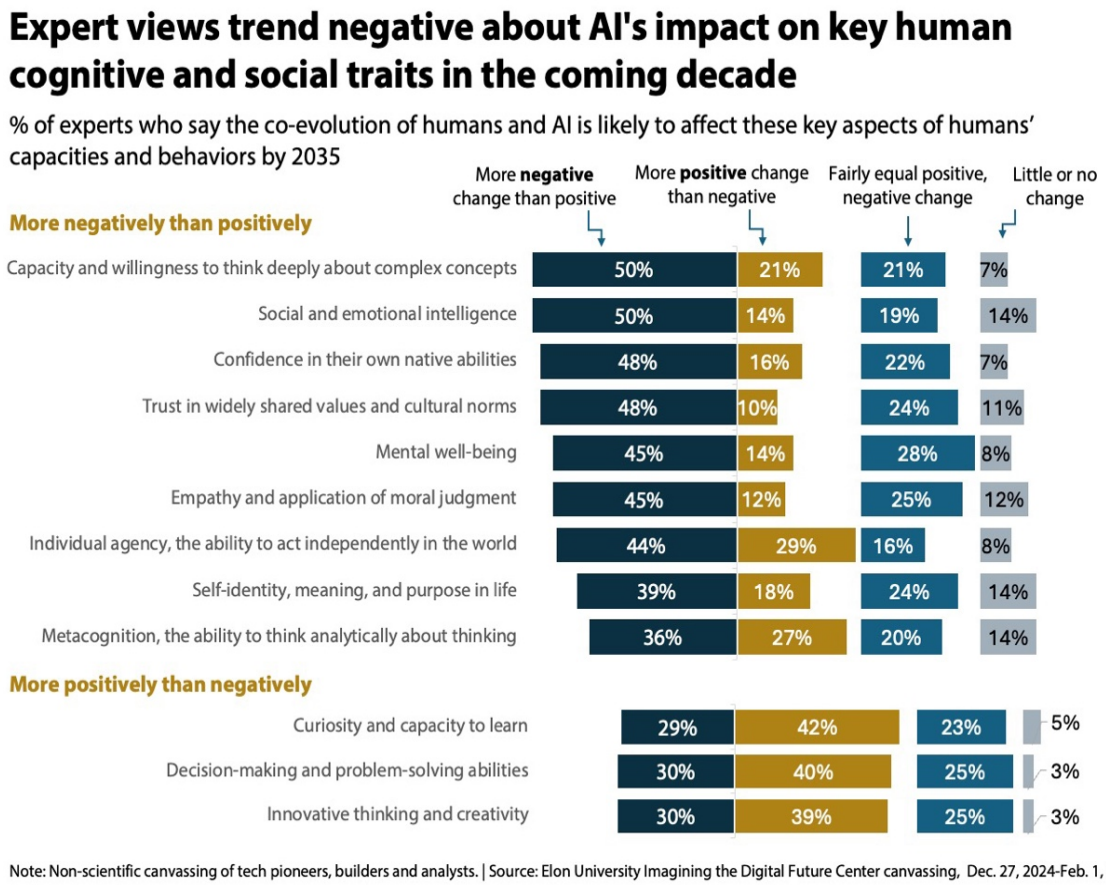
Vint Cerf, vice president and chief Internet evangelist for Google, a pioneering co-inventor of the Internet protocol and longtime leader with ICANN and the Internet Society, wrote, “On the positive side, these tools may prove very beneficial to research that needs to operate at scale ... the discovery of hazardous asteroids from large amounts of observational data, the control of plasmas using trained machine-learning models and near term, high-accuracy weather prediction. The real question is whether we will have mastered and understood the mechanisms that produce model outputs sufficiently to limit excursions into harmful behavior. It is easy to imagine that ease of use of AI may lead to unwarranted and uncritical reliance on applications. ... AI agents will become increasingly capable general-purpose assistants. We will need them to keep audit trails so we can find out what, if anything, has gone wrong and how and also to understand more fully how they work when they produce useful results. It would not surprise me to find that the use of AI-based products will induce liabilities, liability insurance and regulations regarding safety by 2035 or sooner.”

Esther Dyson, executive founder of Wellville and chair of EDventure Holdings, a famed serial investor-advisor-angel for technology startups and internet pioneer, wrote, “The future depends on how we use AI and how well we equip the next generation to use it. ... AI can give individuals huge power and capacity that they can choose to use to empower others or to manipulate others. If we do it right, we will train children, all people, to be self-aware and to understand their own human motivations – most deeply, the need to be needed by other humans. ... They also need to understand the motivations of the people and the systems they interact with. It's as simple as that and as hard to accomplish as anything I can imagine.”

< UP NEXT… Experts Predicted Change in 12 Essential Traits…

The following section of the summary shares several experts’ opinions along with a numerical breakdown on each of the 12 essential human traits they were asked to evaluate as to whether they expect change will be mostly positive or mostly negative by 2035.

12 specific human capacities and behaviors: Details and select experts' thoughts on likely human change by 2035



The 301 respondents who answered the quantitative questions in this study were asked to predict for each of 12 capacities and behaviors whether the overall change for humans by 2035 will be mostly positive, mostly negative, fairly evenly positive and negative, or little to none.

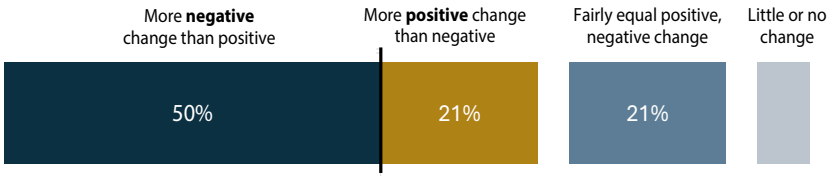
> ***They were asked:*** ***How is the coming Humanity-Plus-AI future likely to affect the following key aspects of humans' capacity and behavior by 2035 as compared to when humans were not operating with advanced AI tools?***

Next, are a dozen short sections outlining the quantitative results for each of the 12 categories, along with related comments from several of the experts. The experts' comments are brief excerpts from their longer responses to this study's overarching essay question about what it will be like to be human in 2035. The numbering on each section is for ease of reading; it doesn't represent any particular "ranking."

➢ Humans' capacity and willingness to think deeply about complex concepts

1. Experts' views on change in humans' capacity to think deeply about complex concepts

% of experts who say the co-evolution of humans and AI is likely to have this effect on humans' capacity and willingness to think deeply about complex concepts by 2035



Note: Non-scientific canvassing of tech pioneers, builders and analysts. | Source: Elon University Imagining the Digital Future Center canvassing, Dec. 27, 2024-Feb. 1, 2025

Experts' Responses in Brief - By 2035 there will be…

50% - More negative change than positive change
21% - More positive change than negative change
21% - Fairly equal positive and negative change
7% - Little to no change

Some of the experts here expressed concern about people's declining attention spans. *This has been attributed at least in part to the public's voracious consumption of readily available quick hits of information and entertainment – especially on social media platforms and in instant search results. Many experts in this study noted that the ability to be informed enough to actively engage with complex concepts is crucial to the future of human society. Some argued that deep thinking builds phronēsis, the practical, context-sensitive capacity for self-correcting judgment and a resulting practical wisdom unobtainable without hard work. Some fear that by 2035 more people will not apply the focus and find the motivation needed to seek reliable sources in building their foundational knowledge, potentially widening polarization, broadening inequities and diminishing human agency. A selection of related quotes extracted from these experts' longer essays:*

"By 2035, the impacts will probably be mostly negative when it comes to changes in human abilities. We know from research in psychology that cognitive effort is aversive for most people in most circumstances. The ability of AI systems to perform increasingly powerful reasoning tasks will make it easy for most humans to avoid having to think hard and thus allow that muscle to atrophy even further. I worry that the urge to think critically will continue to dwindle, particularly as it becomes increasingly harder to find critical sources in a world in which much internet content is AI-generated. ... Knowledge/expertise is likely to be downgraded as a core human value. A positive vision is that humans will embrace values like empathy and human connection more strongly, but I worry that it will take a different turn in which core humanity focuses more on the human body, with physical feats and violence becoming the new core trait of the species." - **Russell Poldrack**, *psychologist, neuroscientist and director of the Stanford Center for Reproducible Neuroscience*

"The capacity for deep thinking about complex concepts may face particular challenges as AI systems offer increasingly sophisticated outputs that could reduce incentives for independent analysis. This dynamic recalls patterns we've observed in our research on community engagement with AI systems,

where convenience can inadvertently reduce participatory decision-making." - **Marine Ragnet**, *affiliate researcher at the New York University Peace Research and Education Program*

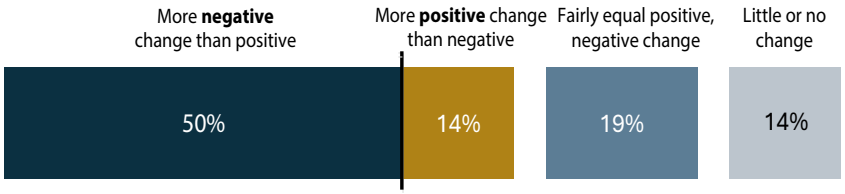
"While AI augments our capabilities, it may simultaneously weaken our independent competence in basic cognitive functions that historically required active engagement and repetition. … AI will turbocharge the pollution of our information ecosystem with sophisticated tools to create and disseminate misinformation and disinformation. This, in turn, will create deeper echo chambers and societal divisions and fragment shared cultural experiences. As AI becomes more pervasive, a new digital divide will emerge, creating societal hierarchies based on AI fluency. Individuals with greater access to and mastery of AI tools will occupy higher social strata. In contrast, those with limited access to or lower AI literacy will be marginalized, fundamentally reshaping social stratification in the digital age." - **Alexa Raad**, *longtime technology executive and host of the TechSequences podcast*

"AI has the potential to improve the 'cognitive scaffolding' of human behavior just as computers, the internet and smartphones have done in the past. It will become easier to find and synthesize information, making our connection to the digital world even deeper than it already is in both professional and personal settings. ... Depending on how we develop and apply AI systems, there is both an opportunity for AI to mostly empower human intelligence and creativity by scaffolding their intellectual pursuits, as well as a threat that AI will erode intelligence and creativity by forcing human behavior into following AI-amenable patterns." - **Bart Knijnenberg**, *professor of human-centered computing, Clemson University*

➢ Humans' social and emotional intelligence

2. Experts' views on change in humans' social and emotional intelligence

% of experts who say the co-evolution of humans and AI is likely to have this effect on humans' social and emotional intelligence by 2035



Note: Non-scientific canvassing of tech pioneers, builders and analysts. | Source: Elon University Imagining the Digital Future Center canvassing, Dec. 27, 2024-Feb. 1, 2025

Experts' Responses in Brief - By 2035 there will be…

- **50% - More negative change than positive change**
- **14% - More positive change than negative change**
- **19% - Fairly equal positive and negative change**
- **14% - Little to no change**

Many of these experts say they are concerned about AI-driven interactions replacing or dramatically altering human-to-human emotional bonds. *They say people may become less adept at reading social cues, expressing emotions effectively and being willing to engage with others in what can sometimes be*

messy or complicated interpersonal relationships. Some even predict that many humans will prefer AIs as life partners. They wonder why a human would maintain a reciprocal relationship with another person, which might require constant work, when a perfectly attuned and unneedy "synthete" is available. Following is a selection of related quotes extracted from these experts' longer essays:

"Interacting with a 'real' human will likely become the privilege of the wealth-management set, amplifying the sense that day-to-day life, from medicine to finance, is governed by robots, removing the key component of a sense of agency in psychological well-being. The availability of 'Her'-like substitutes for human interaction may well further weaken the social muscle of many, feeding the epidemic of loneliness, particularly among teenagers and young adults. AI is more 'efficient' than human interaction, with fewer disappointments than online dating, but who will proudly look back on a 25-year marriage with a bot? Bots do not require, foster or reciprocate real-life temperance, charity, diligence, kindness, patience and humility. Indeed, they will likely tolerate and thus encourage self-centeredness and impatience. If we cannot live without bots, can they be turned into 'training wheels' or the equivalent of treadmills at the gym, improving our social interaction fitness?" - **Henning Schulzrinne**, *Internet Hall of Fame member and former co-chair of the Internet Technical Committee of the IEEE*

"It's likely that the near future will see more of us recomposing our identities around virtual personalities. … Some humans are already 'cloning themselves' into online AIs that can represent them at scale, for example, in order to respond to thousands of follower messages on social platforms. … Humans' immersion in these virtual experiences in encounters with deepened game mechanics and lifelike virtual characters will further blur relationships, reshape socialization and erode what it means to be uniquely human. Competition and individualism can also be amplified by frontier AI, empowering some humans to be more capable in their pursuits. We could see more hyper-empowered individuals able to act in much higher orders with the help of the best models – including models that may or may not be 'legal.' Sociopathy could be fostered and reinforced in some individuals working closely with a nigh-omnipotent AI companion toward self-serving goals. Goal-seeking behaviors in general will be amplified by AI, for good and ill." - **Chris Arkenberg**, *senior research manager at Deloitte's Center for Technology, Media and Telecommunication*

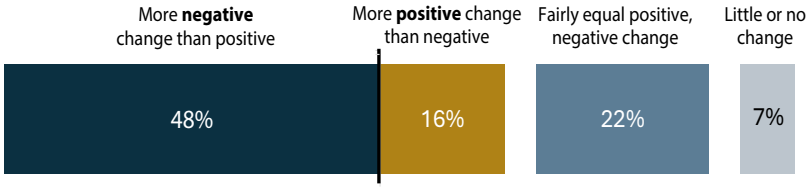
"Modern organizations, in the end, have no value or need for kinship. AI, with its ability to optimize and automate, aligns perfectly with this trajectory, reinforcing function over feeling and utility over unity. … Can we imagine a future in which connection and care are as important as growth and function? Or will humanity's pursuit of progress leave us lonelier and more fractured on a burning planet?" - **A. Aneesh**, *sociologist of globalization, labor and technology at the University of Oregon*

"People [will] outsource their interactions to AI agents, which are left to determine compatibility and determine whether it's even worth meeting up in person. AI chatbots will provide constant 'companionship' even as the loneliness epidemic intensifies and we wonder how 'independent' their suggestions and ideas are. ... Children growing up in this environment will develop different social skills than previous generations, as with the social media generation, becoming fluent in human-AI interaction but struggling with spontaneous human connection." - **Courtney C. Radsch**, *director of the Center for Journalism & Liberty at the Open Markets Institute*

➢ Humans' confidence in their own native abilities

3. Experts' views on change in humans' confidence in their own native abilities

% of experts who say the co-evolution of humans and AI is likely to have this effect on humans' confidence in their own native abilities by 2035



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Experts' Responses in Brief - By 2035 there will be…

48% - More negative change than positive change
16% - More positive change than negative change:
22% - Fairly equal positive and negative change
7% - Little to no change

A notable share of these experts focused on the problems that might arise as humans deepen their dependence *on AI systems and agents and begin to see them as more capable of making choices than they truly are. This could lead people to lose confidence in their own judgment, possibly resulting in a loss of faith in themselves and a diminished expectation of the value of human involvement in conflict resolution, the handling of complex situations and retention of lessons learned from past experiences, plus the diminishment of humans' own capabilities for self-reliance. A few said humans will be able to gain knowledge and have uplifting experiences through AI systems that build their confidence in their native abilities and understanding of the world, just as humans gain such wisdom from other humans. Following is a selection of related quotes extracted from these experts' longer essays:*

"With AI increasingly embedded in everything from personal decision-making to public services from health to transport and everything in between (the 'digital public infrastructure'), humans could become over-reliant on systems we barely understand – and outcomes we have no control over. ... This dependence on opaque systems raises existential concerns about autonomy, resilience and what happens when systems fail or are manipulated, and in cases of mistaken identity and punishment in a surveillance society. It undermines authentic human intelligence unmediated by AI." - **Tracey Follows**, *CEO of Futuremade, a leading UK-based strategic consultancy*

"Human competence will atrophy; AIs will clash like gladiators in law, business and politics; religious movements will worship deity avatars; trust will be bought and sold. Because they will be built under market forces, AIs will present themselves as helpful, instrumental, and eventually indispensable. … To play serious roles in life and society, AIs cannot be values-neutral. They will sometimes apparently act cooperatively on our behalf, but at other times, by design, they will act in opposition to people individually and group-wise. AI-brokered demands will not only dominate in any contest with mere

humans, but oftentimes, persuade us into submission that they're right after all." **- Eric Saund**, *independent research scientist applying cognitive science and AI in conversational agents*

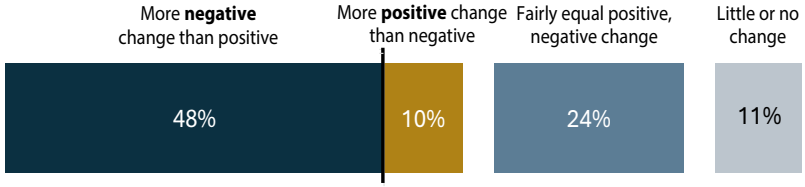
"AI romantic partners will provide idealized relationships that make human partnerships seem unnecessarily difficult. The workplace will be transformed as AI systems take over cognitive and creative tasks. This promises efficiency but risks reducing human agency, confidence and capability. Economic participation will be controlled by AI platforms, potentially threatening individual autonomy. … Basic skills in arithmetic, navigation and memory are likely to be diminished through AI dependence. But most concerning is the potential dampening of human drive and ambition. Why strive for difficult achievements when AI can provide simulated success and satisfaction?" **- Nell Watson**, *president of EURAIO, the European Responsible Artificial Intelligence Office and an AI Ethics expert with IEEE*

"AI/machine learning tools are better equipped than humans to discover previously hidden aspects of the way the world works. … They 'see' things that we cannot. … That is a powerful new way to discover truth. The question is whether these new AI tools of discovery will galvanize humans or demoralize them. Some of the things I think will be in play because of the rise of AI: our understanding of free will, creativity, knowledge, fairness and larger issues of morality, the nature of causality, and, ultimately, reality itself." - **David Weinberger**, *senior researcher and fellow at Harvard University's Berkman Klein Center for Internet & Society*

➢ Humans' trust in widely shared values and cultural norms

4. Experts' views on change in humans' trust in widely shared values and cultural norms

% of experts who say the co-evolution of humans and AI is likely to have this effect on humans' trust in widely shared values and cultural norms by 2035



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Experts' Responses in Brief - By 2035 there will be…

48% - More negative change than positive change
10% - More positive change than negative change
24% - Fairly equal positive and negative change
11% - Little to no change

Keying off insights about the current state of community and political life, a plurality of these experts believe polarized and fragmented societies are likely to be evermore riven as AI tools advance, diminishing trust in institutions and in social arrangements. A recurring theme among those who are concerned is that while its uses can and will enhance human engagement in many respects, most AI

platforms will continue to prioritize the goals of those in power and further empower bad actors. Many who expressed worries briefly commented that their hope is that society will get its act together before it is too late to change. Following is a selection of related quotes extracted from these experts' longer essays:

"Human values underlie behavioral norms with a caveat: Context determines how our behaviors manifest our values. Society benefits when individuals can have reasonable expectations of mutual respect of institutions and enterprises. Does the mutual respect exist now in this political economy? Do business enterprises have human values? If they do, how do their behaviors react to existential competition? By not thinking hard about the context of peoples' lives? Unbounded by AI regulation, in 2035 individuals in the U.S. could face longer but less fulfilling lives. … Our reliance on AI will exceed our ability to fact check it; never mind the existential threat to humankind. In 2035, are we going to have AI tools that feed human curiosity, or be reliant on AI crutches?" - **Rosalie R. Day**, *co-founder at Blomma, a platform providing digital solutions to clinical research studies*

"One of the most important concerns is the loss of factual, trusted, commonly shared human knowledge. … Already today most of the most widely viewed 'news and information' the public sees about climate change, pandemics, nation-state disagreements, regulation, elections and so on is no longer based in true facts. Instead, we see fake news or unfounded opinions often used to shape perceptions to achieve manipulation of outcomes. The use of AI for deepfakes and more will accelerate this process. This destructive trend could be irreversible because strong financial and political interests profit from it in many ways. ... When every 'fact' is relativized and open to doubt the capacity for indignation is likely to be reduced. There are no examples in human history of societies that have survived in the absence of shared truth for too long." - **Giacomo Mazzone**, *global project director for the United Nations Office for Disaster Risk Reduction*

"AI's ability to curate everything – from entertainment to social connections – could lead to highly personalized but isolated 'realities.' This is a trend I call the rise of 'Citizen Zero,' where people are living only in the present: disconnected from a shared past, not striving toward any common vision of a future. Human interactions may become more insular as we retreat into algorithmically optimized echo chambers. And, as we already know, millions of pages of research, footnotes and opinion are disappearing daily from the internet whilst the Tech Platforms reach into our phones and erase photos or messages whenever they want – perhaps even without our knowledge – and AI is only going to make that more scalable." - **Tracey Follows**, *CEO of Futuremade*

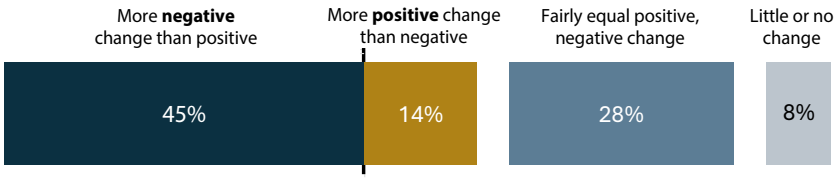
"AI will become the attractive nuisance of convenience. We won't know what we no longer know." - **Henning Schulzrinne**, *Internet Hall of Fame member, former co-chair, IEEE Internet Technical Committee*

"The trend toward polarization, exacerbated by the divergence in human use of digital tools, will create more challenges to humans' trust in others, in institutions and in their world views. Already today, we have to question everything we experience in the digital sphere. The need for the application of critical digital literacy skills will increase greatly at a time in which most people may not be inclined or able to implement them. Determining who and what to trust will be a significant life skill that some will develop but many will not. Each person's management of their digital selves will strongly impact personal agency." - **Charlie Firestone**, *president of the Rose Bowl Institute, previously vice president and executive vice president at The Aspen Institute*

➢ Humans' mental well-being

5. Experts' views on change in humans' mental well-being

% of experts who say the co-evolution of humans and AI is likely to have this effect on humans' mental well-being by 2035



Note: Non-scientific canvassing of tech pioneers, builders and analysts. | Source: Elon University Imagining the Digital Future Center canvassing, Dec. 27, 2024-Feb. 1, 2025

Experts' Responses in Brief - By 2035 there will be…

45% - More negative change than positive change
14% - More positive change than negative change
28% - Fairly equal positive and negative change
8% - Little to no change

As they considered this question, more experts than not referred to their concerns that AI tools might affect the core qualities of mental well-being *– things like true companionship and authentic relationships, feelings of control and mastery of life experiences, exposure to meaningful emotional encounters, the quest for an integrated life and the yearning for solitude and a simplified life. A small share of the experts noted that AI systems mitigate loneliness and might bring the balm of contact with a wider exposure to people and ideas that align with them. A number of the essays that touched on the category of social and emotional intelligence also mentioned well-being; the impact of AI in both of these categories is seen as generally dependent on how the tech is designed and operated by powerful platforms and on how individuals personally choose to use these tools. Following is a selection of related quotes extracted from these experts' longer essays:*

"Many people's happiness is at least partially derived from their sense that the world somehow needs them, that they have utility. I think AI will likely end that utility. Additionally, there are risks that AI worsens the climate crisis and severs planetary boundaries, mostly due to change in economic growth. Addiction to AI in some form (AI friends and relationships, polarizing news and information, entertainment, etc.) could lead to a dystopian future. All of this has impact on well-being." - **Otto Barten**, *sustainable-energy engineer, data scientist, entrepreneur and founder and director of the Existential Risk Observatory, based in Amsterdam*

"By 2035, on the one hand, the human-level performance of uncontrolled and unbridled AI systems is likely to disrupt our sense of agency, autonomy and free will. In addition, constantly comparing ourselves to these systems may result in feelings of inadequacy, incompetence or helplessness – for some, to the point of even worrying over the deterioration of our mental or intellectual state. At a more profound level, our deepening dependence upon AI may lead to experiencing a loss of individuality and uniqueness, or a loss of self, as well as a loss of control over one's own life." - **Charalambos Tsekeris**, *research associate professor in digital sociology at the National Centre for Social Research of Greece*

"Psychologists and others will become alarmed at the fact that humans are forming deeper bonds of trust and friendship with AI companions than with either their human families or friends. This will be most acute with children overly attached to their AI companions at the expense of social development. Among adults, psychologists will warn of a growing number of cyber-hikikomori – adults who have disappeared into severe social isolation, spending all their time with vivid AI companions." - **Paul Saffo,** *Silicon Valley-based technology forecaster*

"The scalable capacity of AI to generate ever-new synths could become overwhelming for us. What's irksome is not the fact that these dupes will be ubiquitous; it is their endless variety and effortless inconstancy. We will be overwhelmed by their presence everywhere. We will resent that saturation, as it will keep depleting our mental and emotional capacities on a daily basis. We will push back and demand limits. - **Maja Vujovic**, *book editor, writer and coach at Compass Communications in Belgrade, Serbia*

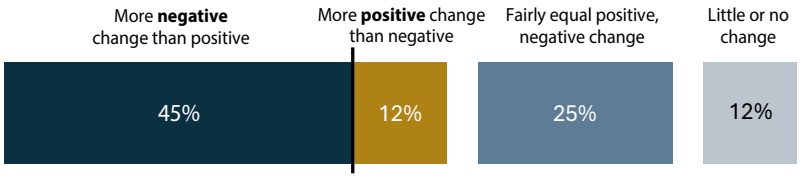
"Human purpose will change. Many will find themselves without purpose and this will harm well-being and lead to societal unrest. Our quest for precision will ultimately take away the serendipity of being a human. The pressure to reduce risk will make life pretty boring. All these opportunities to be human and to take risk will be muted by the perceived expertise of AI and the math that works against human bias. In almost every scenario, organizations will have to ask four questions about when and where we insert a human in the decision-making process. Do we have full-decision machine intelligence? Do we augment the machine with a human? Do we augment the human with a machine? Do we have an all-human decision?" - **R Ray Wang**, *principal analyst, founder and CEO of Constellation Research*

"The vulnerability inherent in human interaction – the messiness of emotions, the mistakes we make, the unpredictability of our thoughts – is precisely what makes us human. When AI becomes the mediator of our relationships, those interactions could become optimized, efficient and emotionally calculated. The nuances of human connection – our ability to empathize, to err to contradict ourselves – might be lost in a world in which algorithms dictate the terms of engagement." - **Evelyne Tauchnitz**, *senior research fellow at the Lucerne (Switzerland) Graduate School of Ethics*

➢ Humans' empathy and application of moral judgment

6. Experts' views on change in humans' empathy and application of moral judgment

% of experts who say the co-evolution of humans and AI is likely to have this effect on humans' empathy and application of moral judgment by 2035



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Experts' Responses in Brief - By 2035 there will be…

45% - More negative change than positive change

12% - More positive change than negative change
25% - Fairly equal positive and negative change
12% - Little to no change

Machine intelligence is being trained to express human-like empathy and kindness in transactions, and it is already being used to make data-based judgments *in court decisions, hiring, mortgage applications and more. Many of these experts expressed concerns about AI's impact on human empathy and moral judgment. Some worry that if moral and ethical decision-making is outsourced to AI at the same time that human-to-human in-person connections are being diminished, people may lose the ability to engage in the hard work of dealing with moral dilemmas critically. That, in concert with other diminished human capabilities, could reduce people's abilities for ethical reasoning and remove them from a sense of personal responsibility. A selection of related quotes extracted from these experts' longer essays:*

"As the interaction between AI systems and human deepens, core human traits like creativity, empathy and reasoning will evolve and continue to prevail as the main differentiators of human qualities and attributes that AI systems and computer algorithms still lack and may not be able to fully develop. Maintaining a balance between embracing the benefits of AI while preserving core traits and human behaviors will be the next race to preserving the future of our existence in a fully connected and AI driven society." - **Cristos Velasco**, *international practitioner in cyberspace law and regulation and board member at the Center for AI and Digital Policy, based in Mannheim, Germany*

"Memory, numeracy, organizational capabilities, moral judgment – all of these will be diminished. AI will be tasked to remember for us. … We will not need to strategize in order to organize our lives because AI will be faster and more accurate than us in organizing our spaces, our agenda, our planning, our strategies, our communication with others. All of this is likely to result in the diminishment of our capacity for moral judgment. AI will be used by many people to take shortcuts to making moral and ethical decisions while leaving them in the dark about how those decisions are made. AI is already leading to the fragmentation and dehumanization of work." - **Giacomo Mazzone**, *global project director for the United Nations Office for Disaster Risk Reduction*

"Will AI improve our morals? No. Will it eradicate our inclinations toward sin? Hardly. Instead, it will invent new ways to do both – offering tools for both crime and security, for both deception and enlightenment. ... Some say that this opens the possibility for advanced AIs of the future to reach 'divine' characteristics, such as omnipotence, omniscience and omnipresence, potentially pushing humanity out of its linear comfort zone and narrowing our sense of human nature." - **David Porush,** *writer and longtime professor at Rensselaer Polytechnic Institute*

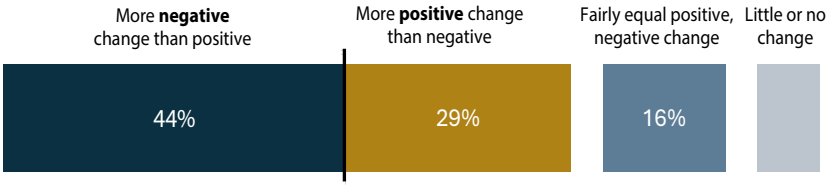
"Capitalism, marketing, attention economics, precarious work, competition and inequality are amongst the forces that seem poised to shape the design of AI systems, human-AI interactions, and, ultimately, human life. Thus, while an 'Oasis'-style virtual world with unlimited human-AI-enabled creativity and empathy could evolve in theory, it's likely that a major AI-VR environment will be (at least as) replete with marketing, attention-seeking mechanisms and various unhealthy and unfortunately predatory behaviors. The essence of our cultural and economic milieu, therefore, seems likely to heavily mediate how human-AI interactions shape human essence." - **Daniel S. Schiff**, *co-director of the Governance and Responsible AI Lab at Purdue University*

"Machines and technologies have always played a key role in the construction of how nations and civilizations perceive themselves. Human dependence, adaptations and appropriations of technologies will evolve through time and will be tested in terms of their relevance, social harms, effacement of human norms, empathy and rights. Machine learning and algorithms will be cued through human behaviour and conversely these will in time cue us in terms of our responses on platforms and utilizing technological interfaces to manipulate human senses. There is an iterative process at play." -**Yasmin Ibrahim**, *professor of digital economy and culture at Queen Mary University of London*

➢ Humans' individual agency and the ability to act independently

7. Experts' views on change in humans' individual agency and the ability to act independently in the world

% of experts who say the co-evolution of humans and AI is likely to have this effect on humans' individual agency and the ability to act independently in the world by 2035



Note: Non-scientific canvassing of tech pioneers, builders and analysts. | Source: Elon University Imagining the Digital Future Center canvassing, Dec. 27, 2024-Feb. 1, 2025

Experts' Responses in Brief - By 2035 there will be…

44% - More negative change than positive change
29% - More positive change than negative change
16% - Fairly equal positive and negative change
8% - Little to no change

The views expressed here echo findings from the Imagining the Digital Future Center's past reports on the "Future of Human Agency" and "Artificial Intelligence and the Future of Humans." A plurality of these experts believes AI tools create a paradox of control, convincing individuals that they are enhancing their lives while shaping their decisions to suit others' needs behind the scenes. Most of these experts expect this will weaken humans' cognitive and strategic abilities, leading to less self-initiated problem-solving and the diminishment of moral judgment. They also note that as AI systems are further embedded in key systems of business, law and government, they are likely to further remove humans from critical decision processes altogether. Following is a selection of related quotes extracted from these experts' longer essays:

""Smartphone technology has already transformed humanity. We don't need to wait 10 more years to understand that things are not going well for us. By becoming addicted to our phones and the entertainment/distraction that they provide, we have already changed our behavior and might already be in the process of losing many of our core human traits. AI might simply accelerate our descent into the dystopian abyss, because we are already losing or surrendering our agency to make decisions for ourselves." - **Eni Mustafaraj**, *associate professor of computer science at Wellesley College*

“The deepening partnership between humans and artificial intelligence through 2035 reveals a subtle but profound paradox of control. As we embrace AI agents and assistants that promise to enhance our capabilities, we encounter a seductive illusion of mastery – the fantasy that we‘re commanding perfect digital servants while unknowingly ceding unprecedented control over our choices and relationships to the corporate – and in some cases government – entities that shape and control these tools. … By 2035, they will become the primary lens through which we perceive and interact with the world. Unlike previous technological mediators, these systems won‘t simply connect us to others; they‘ll actively shape how we think, decide and relate. The risk isn‘t just to individual agency but to the very fabric of human society. … The stakes transcend mere efficiency or convenience. They touch on our fundamental capacity to maintain meaningful control over our personal and societal development.” - **Lior Zalmanson**, *professor at Tel Aviv University – expertise in algorithmic culture and the digital economy*

“Outsourcing any human analytical process will, over time, lead to an attrition of any particular skill set. This is worrying if humans’ well-being is still tied to their ability to make independently derived, informed decisions. This is one level at which ubiquitous AI as everyday mundane helpers or ‘micro agents’ will influence humans by 2035. Humans’ ability to process information in an unaided way will suffer because they will no longer be constantly practicing that skill. As the use of AI becomes more routine this will have deeper impact.” - **Annette Markham**, *chair and professor of media literacy and public engagement at Utrecht University, the Netherlands*

“In thinking about the consequences of the advent of true AI, the television series ‘Star Trek’ is worth reconsidering. ‘Star Trek’ described an enemy alien race known as the Borg that extended its power by forcibly transforming individual beings into drones by surgically augmenting them with cybernetic components. The Borg’s rallying cry was ‘you will be assimilated.’ Despite warnings by computer scientists going at least as far back as Joseph Weizenbaum in ‘Computing Power and Human Reason’ in 1976 that computers could be used to extend but should never replace humans, there has not been enough consideration given to our relationship to the machines we are creating.” **- John Markoff**, *author, "Machines of Loving Grace: The Quest for Common Ground Between Humans and Machines"*

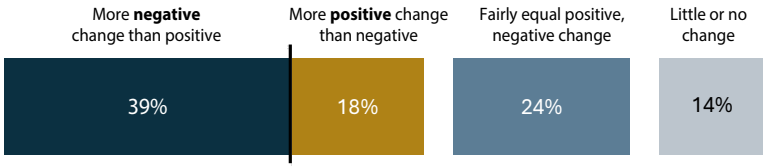
“As their AI systems become more sophisticated at predicting and influencing human behavior, people become more dependent on their services, generating even more valuable training data and value for the AI agents, tools, applications and products that will pervade every aspect of our daily lives by 2035. ... In the best future, privacy and cognitive liberty are protected as fundamental rights, AI corporations are subject to rigorous oversight and their systems are directed toward solving humanity‘s greatest challenges (in collaboration with the communities experiencing those challenges) rather than taking over core human capacities” - **Courtney C. Radsch**, *director of the Center for Journalism & Liberty*

“Maintaining humanity while extending consciousness requires ownership of that which simulates the individual’s being in the world. The world’s largest tech companies are fixated on AI as a commercial product. In focusing their attention on AI’s essence as a consumer artifact, their development of agency in AI risks making agency serve corporate ends and therefore become parasitic and dehumanizing. … When we can act collaboratively with a trusted AI simulation of our self, we will be experiencing extended cognition with joint responsibility for collective action. Agency without responsibility is malignant. We prompt and inform our AI and our AI prompts and informs us. Having the individual, not corporations, in control of action is the key to remaining human as extended consciousness reframes our realities.” - **Garth Graham**, *a global telecommunications expert and consultant based in Canada*

➢ Humans' self-identity, meaning and purpose in life

8. Experts' views on change in humans' self-identity, meaning, and purpose in life

% of experts who say the co-evolution of humans and AI is likely to have this effect on humans' self-identity, meaning, and purpose in life by 2035



Note: Non-scientific canvassing of tech pioneers, builders and analysts. | Source: Elon University Imagining the Digital Future Center canvassing, Dec. 27, 2024-Feb. 1, 2025

Experts' Responses in Brief - By 2035 there will be…

39% - More negative change than positive change
18% - More positive change than negative change
24% - Fairly equal positive and negative change
14% - Little to no change

More experts than not see negative outcomes as they imagine how the humans-plus-AI evolution affects people's identities *and their sense of meaning and purpose in their lives. They said there are many potentially daunting challenges ahead as people try to maintain a coherent sense of self in a world where AI increasingly mediates and simultaneously expands the potential for human-to-human experiences and relationships and human-synth experiences and relationships. They worry about the fragmentation of identity through multiple digital personas and the potential loss of traditional sources of meaning and purpose, particularly those found through jobs/work. However, some experts see enhanced human flourishing. A selection of related quotes extracted from these experts' longer essays:*

"Being human itself will undergo the most profound changes in human history due to having an alt-AI self, an alt-AI companion or counselor. As we do with all our tools, we will take AI into our bodies and minds. We will no longer think of ourselves as solely human; or, rather, we won't think that 'being human' doesn't include AI – we will see ourselves part-human, part-other. Our self-sense will now expand to a family of AI agents who work with us, for us, (against us?) – all of which extend our proprioception, stretching it to the distending point. Schizophrenia will be the natural state of most humans – common as aspirin – as we split our identities, part of us in an online venue, part relying on some manner of AI to complete our day-to-day tasks – and using the same AI agents and 'helpers' to self-promote, self-brand, self-improve. On platforms owned and financed by oligarchs who want us to use these tools to keep their businesses profitable and earning billions or even trillions of dollars to personally enrich themselves, the self becomes the ultimate business model." - **Barry Chudakov**, *principal at Sertain Research*

"AI will redefine who is a 'smart' and a valued, contributing member of society. Who has power and authority when AI reduces the need for human cognitive development and education – how will learning change when AI handles most knowledge work? What is the opportunity for self-improvement and purpose when there is no hope of competing against a bot? Perhaps universities will fill the gap.

Instead of providing an education, they will help young people build a life of meaning. … Ironically, the U.S. will lead the world in AI development and then watch its society rapidly decline because of it. This will accelerate the psychological and financial deterioration of an American society already in danger of becoming addicted to their personalized, AI-driven media." - **Mark Schaefer**, *marketing strategist*

"How individuals perceive and adapt to the integration of AI into daily life will significantly influence their human experience. Some will feel enhanced by the technology we've created, while others will view AI as something anti-human. Regardless of individual perspectives on AI in relation to their sense of 'I,' everyone will be compelled to reevaluate and potentially redefine their personal definition of what it means to be human. … Those who resist and view AI as 'anti-human' may feel superior in intangible ways by redefining beliefs and reinterpretations of ancient traditions. Conversely, those who embrace AI may feel intellectually superior and are likely to have opportunities for greater material success. These advantages could exacerbate existing divisions, including economic, religious and cultural ones." - **Stephan Adelson**, *president of Adelson Consulting Services, an expert on digital public health*

"AI will enable us to construct and manage multiple digital personas, tailored to different contexts online. While this offers unprecedented flexibility in self-expression and a kind of multiplicity of the self, it also risks fragmenting the core sense of identity, leaving people grappling with the question: Who am I, really? … The concept of the 'real' self may diminish in a world where AI curates identities through agents that guide content, contracts and relationships. In fact, 'authenticity' is not a standard that will apply in an AI world at all – a world of clones and copies. Authenticity is de facto dead." - **Tracey Follows**, *CEO of Futuremade, a consultancy based in London, UK*

"Many fear that machines will create their own culture and ethos. I am not convinced, but if that does happen it will be intertwined with the evolving social, environmental and economic ecosystems that we live in, create, destroy and recreate. ... The extension of mind into AI challenges our fundamental sense of self and agency. How do we maintain a coherent identity when our thoughts and memories are increasingly externalized and shaped by AI systems?" - **Anriette Esterhuysen**, *South Africa Internet pioneer, Internet Hall of Fame member*

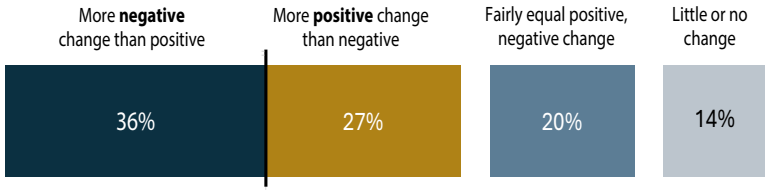
"Looking ahead, we must also consider the concept of our 'digital shadow.' In the not-so-distant future this complementary digital self – comprising our virtual and online skills, digital avatars and accumulated data – will merge with our physical existence. This fusion may grant us access to a new dimension of experience, a kind of 'timelessness' where our identities transcend mortality. Future generations could interact with our digital selves. ... This evolution raises profound questions about identity, legacy and the human experience in an AI-driven world. AI's potential to enhance human life is immense, but its integration into society demands intentionality and vigilance." - **Neil Richardson**, *founder of Emergent Action, a strategic consultancy, and co-author of "Preparing for a World That Doesn't Exist - Yet"*

"*If* AI in fact eventually achieves consciousness, then what? Suddenly, it changes the nature of how we define what it means to be human. Who will feel more existential dread then? Us – *of the AI* – or the AI of us? How does that impact feelings of happiness or sadness, meaningfulness or ennui, psychological richness or abject pointlessness? … We will ultimately merge. Eventually AI will become the dominant part of human consciousness, doing everything that we can do far better than we could ever do it. AI will become the dominant part of the AI-human pair, but because AI will not waste, humans will never be eliminated or even subservient. We will provide ... those brief blossoms of spontaneous, un-programmable delight AI will never be able to generate." - **Chris Labash**, *associate professor of communication and innovation at Carnegie Mellon University*

➢ Humans' metacognition - the ability to think analytically about thinking

9. Experts' views on change in humans' metacognition - the ability to think analytically about thinking

% of experts who say the co-evolution of humans and AI is likely to have this effect on humans' metacognition - the ability to think analytically about thinking by 2035



Note: Non-scientific canvassing of tech pioneers, builders and analysts. | Source: Elon University Imagining the Digital Future Center canvassing, Dec. 27, 2024-Feb. 1, 2025

Experts' Responses in Brief - By 2035 there will be…

36% - More negative change than positive change
27% - More positive change than negative change
20% - Fairly equal positive and negative change
14% - Little to no change

The contention of those who are anxious about the fate of people's ability to examine their own assumptions and thought processes *goes like this: When AI constantly mediates decision-making, individuals may lose confidence in their own reasoning abilities, struggle with metacognitive monitoring of their own thought processes and default to AI recommendations without critically assessing them. The counter-case some experts make goes like this: AI could serve as a mirror to help people understand their own cognitive biases and thinking patterns. In addition, AI's aggregation of collective intelligence could expand people's perspectives, even "how we create understanding itself." There were comments, as well, about the possibility that machines may become self-aware, even achieving an "artificial consciousness." Following is a selection of related quotes extracted from these experts' longer essays:*

"This transition fundamentally reshapes core human behaviors, from problem-solving to creativity, as our cognitive processes extend beyond biological boundaries to incorporate machine interpretation and understanding. ... The emergence of the 'knowledge-ome' – an ecosystem where human and machine intelligence coexist and co-evolve – transforms not just how we access information, but how we create understanding itself. AI systems reveal patterns and possibilities beyond human perception, expanding our collective intelligence while potentially diminishing our role in meaning-making. This capability forces us to confront a paradox: as machines enhance our ability to understand complex systems we risk losing touch with the human-scale understanding that gives knowledge its context and value." - **Dave Edwards**, *co-founder of the Artificiality Institute*

"Being conscious is not the result of some complicated algorithm running on the wetware of the brain. It is rooted in the fundamental biological drive within living organisms to keep on living. The distinction between consciousness and intelligence is important because many in and around the AI community assume that consciousness is just a function of intelligence: that as machines become smarter, there will come a point at which they also become aware, at which the inner lights of consciousness come on for

them." - **Anil Seth**, *professor of computational neuroscience at the University of Sussex, UK, and author of "Being You: A New Science of Consciousness"*

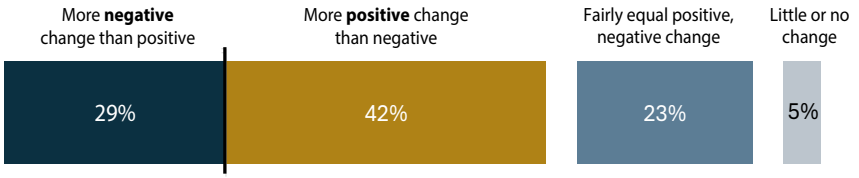
"AI is a form of self-inflicted dementia for humans. In the near-term, it may improve the physical condition of humans. But in the long-term it diminishes human cognition. It strips from humans responsibility for the human condition. As AI grows more powerful and commonplace, human cognition will decline. We no longer learn how to remember, analyze, reason or innovate. AI does these for us. … The real danger is that we will pass a tipping point beyond which we cannot retrieve from AI that which makes us human. The dementia will be complete." - **Ken Grady**, *professor and researcher at LegalRnD – The Center for Legal Innovation at Michigan State University*

"Working for us as agents – no longer merely tools that obey our instructions and whims – AI represents humans' first real *extended mind*. Not only have we extended the human mind into our tools; that mind is thinking and deciding alongside and sometimes *without* the humans using it. By all accounts AI will outthink humans. … Being human will undergo profound changes as AI and the human mind merge; the human mind will integrate with AI. Simply put, there will be more of each of us (AI extensions and digital personas) – who aren't really each of us. This is *radical virtualization*. … The essential and existential experience of being human will embrace the AI extension. Wholly unimaginable realities will emerge, with almost no moral or conceptual guidelines. This means that we must begin urgently now to shore up our moral awareness of the far-reaching implications of inviting AI into our lives and minds." - **Barry Chudakov**, *principal at Sertain Research*

➢ Humans' curiosity and capacity to learn

10. Experts' views on change in humans' curiosity and capacity to learn

% of experts who say the co-evolution of humans and AI is likely to have this effect on humans' curiosity and capacity to learn by 2035



Note: Non-scientific canvassing of tech pioneers, builders and analysts. | Source: Elon University Imagining the Digital Future Center canvassing, Dec. 27, 2024-Feb. 1, 2025

Experts' Responses in Brief - By 2035 there will be…

29% - More negative change than positive change
42% - More positive change than negative change
23% - Fairly equal positive and negative change
5% - Little to no change

The experts' views were more likely to be positive than negative about the effect AI will have on curiosity and the capacity to learn*. While very few of the people who wrote essay responses mentioned this category as growing in strength as a human trait by 2035, many expect that people's*

implementation of AI and the knowledge gained through the use of AI tools will expand their personal capacity for learning and motivate them to be more curious than when they are operating under the power of their own human capabilities alone. Many worry that humans' growing dependence on AI systems will narrow their cognitive experience to the point at which they simply outsource their essential selves to machine outputs. They fret about atrophy of humans' capacity to learn as their innate curiosity dampens. Following is a selection of related quotes:

"LLMs can be programmed to reveal uncharted territory if we are well-versed in interacting with them effectively to harness that potential. And they do not preclude the teaching of curiosity and fundamentals. ... Interaction with these tools – for that is what they are – can engender new energy within humans toward the exploration and iterative development of new ideas. The offshoot side effect of 'creativity' inspired by working with AI models can increase our appreciation for the distinct beauty and value of naturally-derived human output. The offshoot side effect of creativity inspired by working with AI models can increase our appreciation for the distinct beauty and value of naturally-derived human output." - **Keram Malicki-Sanchez**, *Canadian founder and director of VRTO Spatial Media World Conference and the Festival of International Virtual and Augmented Reality Stories*

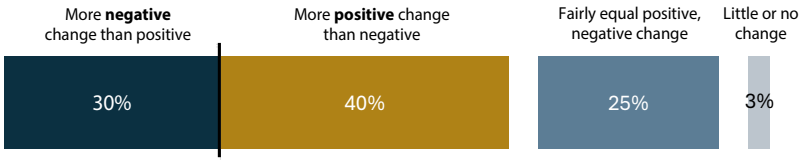
"Can our innate curiosity save us from an AI-reliant post-truth dystopia? The human attention budget allows us to make routinized decisions which never rise to the level of consciousness. I am not so worried about potential human laziness – curiosity counteracts that – but about our growing reliance on AI-asserted 'facts.' AI crutches become one less debit to individuals' attention budgets. ... Will AI be used as a tool to catalyze curiosity and what could be? I have no idea. ... In 2035, are we going to have AI tools that feed human curiosity, or will we be reliant on AI crutches?" - **Rosalie R. Day**, *co-founder at Blomma, a platform providing digital solutions to clinical research studies*

"The future of humans and AI is a future of humans and humans, in which AI facilitates some connections, hinders others and reshapes how we exchange knowledge and information just as predecessor information technologies have done. The impact of these advances will be shaped by the literacies we develop and the skills with which we approach these processes and each other as ever-changing humans in an ever-changing world." - **Denis Newman Griffis**, *lecturer in data science, University of Sheffield, UK*

➢ Humans' decision-making and problem-solving abilities

11. Experts' views on change in humans' decision-making and problem-solving abilities

% of experts who say the co-evolution of humans and AI is likely to have this effect on humans' decision-making and problem-solving abilities by 2035



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Experts' Responses in Brief - By 2035 there will be…

30% - More negative change than positive change
40% - More positive change than negative change
25% - Fairly equal positive and negative change
3% - Little to no change

The experts' views were more likely to be positive than negative about the influence that humans' further adoption of AI tools and systems will have on their decision-making and problem-solving skills. *A number of them expect that the implementation of AI and the knowledge gained through the use of AI tools will somehow expand humans' own individual capacities in decision-making and problem-solving. Some predicted that when AI systems tackle low-priority tasks, relieving people of some of their cognitive burden will allow them to shift their attention to more important issues and tasks. Some expect that the knowledge gained through the use of AI tools will allow people to be more insightful about how they make choices when they are operating under the power of their own human capabilities alone. Many worry, however, about the negative implications of humans deferring their critical thinking to machine intelligence. Following is a selection of related quotes extracted from these experts' longer essays:*

"Unlike in today's monolithic systems driven by profit motives ... imagine a world where you can visualize the ripple effects of your actions across generations. You could explore the environmental consequences of your consumption habits, assess how your parenting choices might shape your children's futures, or even foresee how shifts in your career might contribute to societal progress. These uses of AI would not only enrich individual decision-making but also cultivate within humanity itself a collective sense of responsibility for the broader impact of our choices. At the heart of this vision lies personalized AI tailored to the unique needs and aspirations of each individual." - **Liselotte Lyngsø**, *founder of Future Navigator, a consultancy in Copenhagen, Denmark*

"There is a high degree of probability that we will have built, by 2035, what I call 'the last human tool' or artificial general intelligence (AGI). ... If humanity is able to stand the waves of change that this advanced intelligence will bring, it could be a bright future. ... Education is poised to transform from a system focused primarily on knowledge acquisition to one that values creativity, problem-solving and the cultivation of unique personal skills. The traditional emphasis on knowledge retention could diminish, encouraging humans to focus more on wisdom and interpretation rather than raw data." - **David Vivancos**, *CEO at MindBigData.com and author of "The End of Knowledge"*

"The boundary between human and machine may blur as AI becomes more integrated into human decision-making. AI-driven assistants and advisors could influence our choices, subtly reshaping how we think and act. While this partnership may lead to more efficiencies, it risks diminishing human agency if individuals begin to defer critical thinking to algorithms." - **Laura Montoya**, *founder and executive director at Accel AI Institute, general partner at Accel Impact Ventures and president of Latinx in AI*

"As humans begin to embrace more-advanced AI, society is viewing it as the solver of its problems. It sees AI as the thinker and society as the beneficiary of that thinking. As this continues, the perceived necessity for humans to 'think' loses ground as does humans' belief in the necessity to learn, retain and fully comprehend information. The traditional amount of effort humans invested in the past in building and honing the critical thinking skills required to live day-to-day and solve life and work problems may be perceived as unnecessary now that AI is available to offer solutions, direction and information – in reality and in perception making life much easier. As we are evolutionarily programmed to conserve energy, our tools are aligned to conserving energy and therefore we immerse ourselves in them. We

become highly and deeply dependent on them. … We will change and in many ways evolve to the point at which the once-vital necessity to 'think' begins to seem less and less important and more difficult to achieve. Our core human traits and our behaviors will change, because we will have changed." - **Kevin Novak**, *founder and CEO of futures firm 2040 Digital and author of "The Truth About Transformation"*

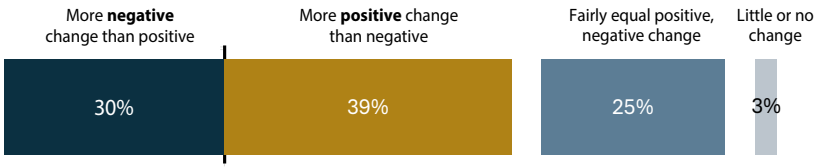
"Because they will be built under market forces, AIs will present as helpful, instrumental and eventually, indispensable. This dependence will allow human competence to atrophy. … AI-brokered demands will not only dominate in any contest with mere humans but oftentimes persuade us into submission that they're right after all. And, as instructed by their individual, corporate and government owners, AI agents will act in opposition to one another as well. Negotiations will be delegated to AI specialists possessing superior knowledge and game-theoretic skills. Humans will struggle to interpret bewildering clashes among AI gladiators in business, law, and international conflict." - **Eric Saund**, *independent research scientist expert in cognitive architectures*

"Humans value convenience over risk. How often do we think 'it won't happen to me!'? It seems inevitable that there will be serious consequences of enabling these complex tools to take action with real-world effects. There will be calls for legislation, regulation and controls over the application of these systems." - **Vint Cerf**, *vice president and chief Internet evangelist for Google*

➢ Humans' innovative thinking and creativity

12. Experts' views on change in humans' innovative thinking and creativity

% of experts who say the co-evolution of humans and AI is likely to have this effect on humans' innovative thinking and creativity by 2035



Note: Non-scientific canvassing of tech pioneers, builders and analysts. | Source: Elon University Imagining the Digital Future Center canvassing, Dec. 27, 2024-Feb. 1, 2025

Experts' Responses in Brief - By 2035 there will be…

30% - More negative change than positive change
39% - More positive change than negative change
25% - Fairly equal positive and negative change
3% - Little to no change

The optimistic experts expect that humans' implementation of AI and the knowledge they gain through the use of AI tools will help expand their own, individual capabilities for creativity and innovation *as they begin to think and create in new ways, exploring numerous possible sources of inspiration and discovering striking new possibilities for expression. Others worry about the loss of some essential human elements of creativity that AI cannot necessarily replicate – the struggle, vision and deep understanding that come from the laborious, hard work of mastering a craft. Another concern is an*

overall "standardization to the mean" or humanity settling for repetitive mediocrity. Following is a selection of related quotes extracted from these experts' longer essays:

"*If* humans embrace AI as a source of change and challenge and we open ourselves to fundamental questions about the nature of thinking and the boundary between human and machine AI could enable a vast expansion of human capacity and creativity. Right now, that feels unlikely for reasons that are economic, social and political, more than technological. If those obstacles are lifted, people with the time, money and tech confidence to explore AI in a non-linear way instead of for narrowly constructed productivity gains or immediate problem-solving can achieve great things. Their use of AI will not only accelerate work and open entirely new fields of endeavor, but it will enable ways of thinking, creating and collaborating that we are only beginning to imagine. It could even possibly deepen the qualities of compassion, creativity and connection that sit at the heart of what we consider human." - **Alexandra Samuel**, *data journalist, speaker, author and co-founder and principal at Social Signal*

"It seems likely that many activities that are contested today will be resolved such that norms [will] allow for AI assistance. Scientific papers, journalism and even most classroom work will be authored with AI collaboration, much as we now accept calculators and spell-checkers. Human-AI artistic and musical collaborations are inevitable, and we will see a flowering of creativity as creative work becomes more accessible to more people. In that sense, AI may actually help us to express our humanity more fully." - **Jeremy Foote**, *computational social scientist teaching and doing research at Purdue University*

"Previously, artists would spend thousands of hours perfecting their skill and their vision simultaneously. With AI tools, the technical skill will become diminished, making it easier to create. … [However,] in the hands of skilled artists who have taken the time to build their craft, AI can become an assistant to speed their process and give them a chance to consider hundreds of alternatives they would not have had the chance to do. This is a positive change. But these artists will have to compete with and be outnumbered by, unskilled people who are simply exploiting the technology with little sense or vision." - **Matt Belge**, *founder of Vision & Logic LLC*

"AI will atrophy human rationality. … The impact of this phenomenon will be multi-dimensional. One part is that we will tend to move away from 'reason' and more toward 'faith' in the results of AI systems. The transition from faith to reason had a profound impact on human nature over the course of centuries as the rationality of the Renaissance era took hold. A return or pivot back to faith-based reasoning will have equally significant impacts. More particularly, it is highly likely that human creativity and faculties for systematic reasoning will deteriorate. ... If we come to accept AI as 'the word' we will ultimately cease to strive to create our own new work." - **Paul Rosenzweig**, *founder of Red Branch, a cybersecurity consulting company, and a senior advisor to The Chertoff Group*

"We need AI to understand the apparently insatiable human thirst to produce as well as consume digital and digitized art, design and music. … AI has the capacity to become much more than video, it will be both the marble and the chisel, the brush and the canvas, the camera and the frame. … But as the systems complexify and evolve, they will start drawing from AI-produced models. In fact, they already are. This contributes to the 'neo' in neo-synthetic. What we are seeing is the emergence of an electronic parthenogenesis, a virgin birth of sorts. It's not just humans producing synthetics in labs and making tires and snack foods out of them, it's the machines themselves synthesizing themselves." - **Peter Lunenfeld**, *director of the Institute for Technology and Aesthetics at UCLA*

A brief selection of compelling predictions

In addition to the broad themes they spelled out, dozens of these experts made striking assertions in their essays about how life might be changed as people adapt to AI in the coming years. Hundreds of additional intriguing insights can be found in reading the nearly 200 expert essays in the full report.

- **The first multi-trillion-dollar corporation will employ no humans** except legally-required executives and board, have no offices, own no property and operate entirely through AI and automated systems. - *Paul Saffo*
- **New AI-aided religions and affinity blocs will form:** "AI advisors and companions will increasingly vie for people's time, attention and allegiance. … Affinity blocs will form among AI devotees and among AI conscientious objectors. New religions and other splinter groups will be 'fueled by personalized dialogues with the deity-avatar.' Human-AI dominance and abuse could spark debates over ethics, morality and policy. - *Eric Saund*
- **"Individuals will face a stark choice between remaining 'classic humans,'** who rely on innate biological faculties, or embracing technological augmentation to enhance or replace certain abilities. This may involve surrendering some human traits to machines – raising ethical and existential questions about what it means to be human." - *David Vivancos*
- **"Proof of humanity" will be required:** "We may find it hard to distinguish between artificial personalities and real ones. That may result in a search for reliable proof of humanity so that we and bots can tell the difference." - *Vint Cerf*
- **Synthetic sentient AIs will vastly outnumber humans in a hybrid world** where humans navigate relationships with biological and artificial entities. Digital assistance will be embedded in everything. People will simply expect AIs to attend to all aspects of their lives. - *Paul Saffo*
- **We could end up with a society of equitable humans and nonhumans:** The advent of advanced AI "could become an occasion for humanity to reassess the meaning of human existence and learn to come to terms with forms of nonhuman intelligence." - *David Krieger*
- **AI-powered autonomous weapons platforms will vastly outnumber human fighters** on battlefields. War will be more violent and lethal and "civilian deaths will vastly outnumber combatant deaths." In addition, "a single madman or angry and alienated teen might bring down civilization with their science project." - *Paul Saffo*
- **"Authenticity is de facto dead"; the real self may be diminished:** Humans have to adapt to the multiplicity of the self and more one-way relationships and isolation due to personalized "realities" that could lead to the fragmentation of one's core sense of identity - *Tracey Follows*
- **AI could redefine the meaning of authenticity in art.** "AI will be both the marble and the chisel, the brush and the canvas, the camera and the frame" co-creating the "neosynthetic." - *Peter Lunenfeld*
- **We should build AI systems as true 'minds for our minds':** Our AIs should be genuine partners in human flourishing, working to upgrade human potential and agency rather than allowing technology companies to "continue to mine our intimacy for profit." - *Dave Edwards*
- **"Anti-AI AIs" will arise:** People will use specialized AI systems that act as cybershields to protect them from AIs other than their own; however, only the superwealthy will afford the best, "living in a shimmering virtual cloud of AIs working to create a cloak of cyber-invisibility." - *Paul Saffo*
- **Things will be smarter than we are:** "Instead of devising 'human-in-the-loop' policies to prevent AI from running amok, we will devise 'AI-in-the-loop' policies to help very fallible humans learn, think and create more effectively and more safely." - *Stephen Downes*

- **"Self-inflicted AI dementia"** will arise out of the atrophy of human cognitive abilities due to over-reliance on AI systems. - *Ken Grady*
- **"Outsourced empathy via 'agent-based altruism:** AI will automate most people's acts of kindness, emotional support, caregiving and charity fundraising." - *Tracey Follows*
- **"Probability matrices" will replace traditional decision-making** as AI-calculated probabilities of success will inform every life choice. "And one factor of the social, political and economic landscape of 2035 will be the decline of literacy due to agented AI shepherding." - *Barry Chudakov*
- **Living a "parasocial life": As human form most of their attachments to AI personas** AI agents and colleagues, companions, deepfakes and other virtual interactions, may sublimate the personal growth we might achieve through authentic human connections. - *Tracey Follows*
- **Most AIs will be "Mediocrity Engines"** that standardize information when you seek knowledge in a way that lacks details, spark and wit and deadens creativity; some inspiring AIs will partner with creative people. - *Alf Rehn*
- **Social bots will be 'training wheels' for our social fitness.** Bots could keep our interpersonal skills sharp: "If we cannot live without bots, can they be turned into 'training wheels' or the equivalent of treadmills at the gym, improving our social interaction fitness?" - *Henning Schulzrinne*
- **A new human "Enlightenment" could begin due to digital twins and other AI agents** doing up to six hours of digital chores every day and allowing humans to "shift this energy to spiritual, emotional and experiential aspects of life." - *Rabia Yasmeen*
- **We will merge with the digital:** "Soon our 'digital shadow' – a complementary digital self that combines our virtual and online skills, digital avatars and accumulated data – will merge with our physical existence. This fusion may grant us access to a new dimension of experience, a kind of 'timelessness' in which our identities transcend mortality." - *Neil Richardson*
- **Affording humans a universe-wide perspective on nearly everything:** "This will be a dawn of a new Enlightenment that expands our perspectives beyond the individual and the species to a worldwide and perhaps universe-wide perspective." - *Ray Schroeder*
- **Will this prediction seem tongue-in-cheek by 2035 or could it really come to fruition in the next decade?** "The best-selling book of 2035 will be 'What Was Human' and it will be written by an AI. Purchases by other AIs will vastly outnumber purchases by human readers. This is because by 2035, humans have become so accustomed to AIs reading books for them and then reporting out a summary that most humans can no longer read on their own. *But the real surprise* is that the book is the first in a series written exclusively for an audience of AIs eager to finally understand the puzzle of what it means to be human." - *Paul Saffo*