APEX IMAGINATORS: LEONARDO DA VINCI, THE QUINTESSENTIAL KNOWLEDGE ENTREPRENEUR

Hilary G. Escajeda*

Introduction

Until this century, homo sapiens stood atop the cognitive food chain. In the decades ahead, technologies such as artificial intelligence (AI) and quantum computing (eventually quantum AI) may topple humans' status as "apex cogitators."[1] This new age—called "The Fourth Industrial Revolution" for the convergence of increasingly powerful and capable cognitive and robotic machines—marks the end of technologies exclusively designed and developed from the "wetware" in our analog, parallel human brains.[2]

---

* Assistant Professor, Mississippi College School of Law. This essay summarizes and expands on the author's earlier work published by the excellent team at the Kansas Journal of Law and Public Policy, Hilary G. Escajeda, *The Vitruvian Lawyer: How to Thrive in an Era of AI and Quantum Technologies*, XXIX Kan. J. of Law & Pub. Pol'y 428 (2020), https://ssrn.com/abstract=3534683 [https://perma.cc/557F-83NR].

[1] Klaus Schwab, *The Fourth Industrial Revolution: What It Means, How to Respond*, WORLD ECON. F. (Jan. 14, 2016), https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond [https://perma.cc/DR77-F9NH]; KLAUS SCHWAB, THE FOURTH INDUSTRIAL REVOLUTION 6–7 (2016); *see* NICK BOSTROM, SUPERINTELLIGENCE: PATHS, DANGERS, STRATEGIES 65 (2014); HENRY A. KISSINGER, ERIC SCHMIDT, & DANIEL HUTTENLOCHER, THE AGE OF AI AND OUR HUMAN FUTURE 178 (2021). The phrase "apex cogitator" describes the highest intentional ponderer or thinker. *Apex*, MERRIAM-WEBSTER, https://www.merriam-webster.com/dictionary/apex [https://perma.cc/SYX6-5KBR] (last visited Apr. 26, 2022); *Cogitate*, MERRIAM-WEBSTER, https://www.merriam-webster.com/dictionary/dictionary/cogitate [https://perma.cc/2KGP-DUZF] (last visited Apr. 26, 2022); *see also Cogitator*, URBAN DICTIONARY, https://www.urbandictionary.com/define.php?term=Cogitator [https://perma.cc/6P9G-JLRZ] ("meaning to think hard, ponder, devise, or meditate") (last visited Apr. 26, 2022).

[2] *See* SCHWAB, *supra* note 1, at 7; Kathleen Walch, *Why Cognitive Technology May Be a Better Term Than Artificial Intelligence*, FORBES (Dec. 22, 2019, 9:58 AM EST), https://www.forbes.com/sites/cognitiveworld/2019/12/22/why-cognitive-technology-may-be-a-better-term-than-artificial-intelligence/#2f14d92f197c; *Wetware*, MERRIAM-WEBSTER,

As more information becomes digitized, the challenge for us is how to use and integrate the totality of human and synthetic knowledge when developing solutions to complex problems.[3] When AI algorithms can effortlessly crunch through zettabytes—and, eventually, yottabytes and brontobytes—of data, our uniquely human ability to think, relate, understand, reason, imagine, create, hustle, and spot opportunities becomes even more essential for our professional opportunities and economic success.[4]

---

https://www.merriam-webster.com/dictionary/wetware [https://perma.cc/J799-S5KH] (last visited Apr. 26, 2022) (defining "wetware" as "the human brain or a human being considered especially with respect to human logical and computational capabilities"); NICK POLSON & JAMES SCOTT, AIQ: HOW PEOPLE AND MACHINES ARE SMARTER TOGETHER 236 (2018) (observing that "human wetware" algorithms cannot be scrutinized like AI prediction rules); FLYNN COLEMAN, A HUMAN ALGORITHM: HOW ARTIFICIAL INTELLIGENCE IS REDEFINING WHO WE ARE xiv–xv (2019); Daniel Dennett, *The Software/wetware Distinction, Comment on "Toward a Computational Framework for Cognitive Biology: Unifying Approaches from Cognitive Neuroscience and Comparative Recognition" by W. Tecumseh Fitch*, 11 PHYSICS LIFE REVS. 367, 367–68 (2014), https://doi.org/10.1016/j.plrev.2014.05.009 ("At least large parts of the human mind *are* (like) programs running on the wetware [] of teams of neurons."); DANIEL C. DENNETT, FROM BACTERIA TO BACH AND BACK: THE EVOLUTION OF MINDS 154 (2017) ("Brains are analog; computers are digital."). Dennett then observes that human brains are parallel, and computers are serial processors. *Id.* at 155; *see also* Frank Wilczek, *Three Observations on Artificial Intelligence*, *in* WHAT TO THINK ABOUT MACHINES THAT THINK 121, 121 (John Brockman ed., 2015) ("Brains use a highly parallel architecture and mobilize many noisy analog units (i.e., neurons) firing simultaneously, while most computers use von Neumann architecture, with serial operation of much faster digital units.").

[3] GILLIAN K. HADFIELD, RULES FOR A FLAT WORLD: WHY HUMANS INVENTED LAW AND HOW TO REINVENT FOR A COMPLEX GLOBAL ECONOMY 130 (2017) (describing digitization); DAVID EPSTEIN, RANGE: WHY GENERALISTS TRIUMPH IN A SPECIALIZED WORLD 277 (2019) (quoting Arturo Casadevall, MD, Ph.D.'s views on modernizing medical education) ("Do we really need to go through courses with very specialized knowledge that often provides a huge amount of stuff that is very detailed, very specialized, very arcane, and will be totally forgotten in a few weeks?"). Dr. Casadevall adds, "Especially now, when all the information is on your phone. You have people walking around with all the knowledge of humanity on their phone, but they have no idea how to integrate it. We don't train people in thinking or reasoning." *Id.*

[4] "A brontobyte is a measure of memory or data storage that is equal to 10 to the 27th power of bytes. There are approximately 1,024 yottabytes in a brontobyte. Approximately 1,024 brontobytes make up a geopbyte." Erin Sullivan, *Definition: brontobyte*, TECHTARGET, https://www.techtarget.com/searchstorage/definition/brontobyte [https://perma.cc/H6HS-8QYF] (last visited Apr. 26, 2022); *see also* Bernard Marr, *Big Data: What Is a*

To remain competitive in this time of accelerating, disruptive, and transformative technologies, "knowledge entrepreneurs"[5] should stretch, push, and reach to develop the uniquely human skills that elude AI. Such skills include curiosity, cognitive range, creativity, emotional intelligence, and an entrepreneurial mindset (business acumen and strategic risk taking).[6]

This Essay describes how smart and creative knowledge entrepreneurs—or "apex imaginators"—can thrive in an era of rapid and continuous technology disruption, workplace and career reorganization, and economic reconfiguration.[7] Because designing

---

Brontobyte?, WORLD ECON. F. (Feb. 12, 2015), https://www.weforum.org/agenda/2015/02/big-data-what-is-a-brontobyte/ [https://perma.cc/7EE6-4USS].

[5] The term "knowledge entrepreneur" represents a twenty-first-century update to Peter Drucker's concept of a "knowledge worker" first articulated in his 1959 book, *Landmarks of Tomorrow*. Rick Wartzman, *What Peter Drucker Knew About 2020*, HARV. BUS. REV. (Oct. 16, 2014), https://hbr.org/2014/10/what-peter-drucker-knew-about-2020 [https://perma.cc/3QA3-NDZM]; *see also* Bernie Carlson, *The Knowledge Entrepreneur: A New Paradigm for Preparing Tomorrow's Engineers and Scientists*, FORBES (Jan. 8, 2018, 8:31 PM EST), https://www.forbes.com/sites/berniecarlson/2018/01/09/the-knowledge-entrepreneur-a-new-paradigm-for-preparing-tomorrows-engineers-and-scientists/#1022399e7be2 [https://perma.cc/A4BJ-9GXW]; Ademola Adekunbi, *Why Today's Young Professionals Are Turning to Knowledge Entrepreneurship*, ENTREPRENEUR: MIDDLE E. (May 1, 2018), https://www.entrepreneur.com/article/312731 [https://perma.cc/B777-7XN3]. *See generally* PETER DRUCKER, LANDMARKS OF TOMORROW (1959).

[6] KEVIN COPE, SEEING THE BIG PICTURE: BUSINESS ACUMEN TO BUILD YOUR CREDIBILITY, CAREER, AND COMPANY 2 (2012) (explaining that "[b]usiness acumen is a keen, fundamental, street-smart insight into how your business operates and how it makes money and sustains profitable growth, now and in the future."); Tara-Nicholle Nelson, *3 Ways to Become a Strategic Risk Taker*, FORBES (Sep. 12, 2012, 7:52 PM EDT), https://www.forbes.com/sites/taranelson/2012/09/12/3-ways-to-become-a-strategic-risk-taker [https://perma.cc/HCC7-4HZR] (explaining that embracing and taking strategic risks (1) provide opportunities for success and learning, (2) open new pathways and prevents stagnation, and (3) seldom result in worst-case scenarios and create learning opportunities for future endeavors). Ms. Nelson also quotes Jeff Bezos's view of risk, "My mind never let me get in a place where I think we [Amazon] can't afford to take these bets, because the bad case never seems that bad to me." *Id.*

[7] *See generally* Hilary G. Escajeda, *The Vitruvian Lawyer: How to Thrive in an Era of AI and Quantum Technologies*, XXIX KAN. J. OF LAW & PUB. POL'Y 428 (2020), https://ssrn.com/abstract=3534683_[https://perma.cc/557F-83NR]; ERIC SCHMIDT & JONATHAN ROSENBERG, HOW GOOGLE WORKS 17 (2014) (labeling a "smart creative" worker as one who will achieve success in the "Internet Century").

and shaping one's career in a time of upheaval presents many challenges, a role model provides inspiration and guidance. Five centuries after his death, Leonardo da Vinci—the quintessential Renaissance Man—serves as a twenty-first-century model for smart and creative knowledge entrepreneurs. Leonardo-like multidisciplinary thinker-doers will possess economic power in this time of technological transformation.[8] Such power arises from curiosity,[9] cognitive range,[10] creativity,[11] emotional intelligence,[12] and street-smarts paired with entrepreneurial hustle.[13] Armed with these cognitive superpowers, apex imaginators kindle unconventional ideas and connections to solve problems and build new business models or opportunities.

This Essay proceeds in six parts. Part I updates the definition of imagination to consider human teaming with artificial (or synthetic) intelligence. It then explains how curiosity, cognitive range, and

---

[8] Scott A. Westfahl & David B. Wilkins, *The Leadership Imperative: A Collaborative Approach to Professional Development in the Global Age of More for Less*, 69 STAN. L. REV. 1667, 1671 (2017) (observing that "clients increasingly expect lawyers to function as multidisciplinary problem-solvers"); *see* ETHAN ZUCKERMAN, REWIRE: DIGITAL COSMOPOLITANS IN THE AGE OF CONNECTION 245 (2013).

[9] *See generally* IAN LESLIE, CURIOUS: THE DESIRE TO KNOW AND WHY YOUR FUTURE DEPENDS ON IT xx (2014) ("Curiosity starts with the itch to explore."). Diversive curiosity describes an attraction to the novelties and encourages humans to seek out new experiences and people. *Id.* Epistemic curiosity involves the "quest for knowledge and understanding" and describes the desire for "intellectual and cultural exploration." *Id.*

[10] *See* EPSTEIN, *supra* note 3, at 34 (describing how "successful [career] adapters were excellent at taking knowledge from one pursuit and applying it creatively to another, and at avoiding cognitive entrenchment").

[11] *See generally* AGUSTÍN FUENTES, THE CREATIVE SPARK: HOW IMAGINATION MADE HUMANS EXCEPTIONAL 1 (2017) ("Creativity is built on interconnections of ideas, experiences, and imagination."); MARCUS DU SAUTOY, THE CREATIVITY CODE: ART AND INNOVATION IN THE AGE OF AI 3 (2019) (defining "creativity as the drive to come up with something that is new, that is surprising, and that has value"). Value includes something "that changes the way we see or experience things." *Id.* at 4.

[12] *See generally* Jacques Bughin, Eric Hazan, Susan Lund, Peter Dahlström, Anna Wiesinger, & Amresh Subramaniam, *Skill Shift: Automation and the Future of the Workforce*, MCKINSEY & CO. (May 2018), https://www.mckinsey.com/featured-insights/future-of-work/skill-shift-automation-and-the-future-of-the-workforce [https://perma.cc/9PSG-AMCV] ("The need for some skills, such as technological as well as social and emotional skills, will rise, even as the demand for others, including physical and manual skills, will fall.").

[13] RAM CHARAN, WHAT THE CEO WANTS YOU TO KNOW: HOW YOUR COMPANY REALLY WORKS 23 (2017); *see* COPE, *supra* note 6, at 2.

creativity energize the active minds of apex imaginators. It follows with a brief exploration of how human "emotional intelligence," coupled with tacit and explicit knowledge, stokes the cognitive superpowers of those extraordinary humans who achieve apex imaginator status.

Part II describes Leonardo da Vinci's curiosity, cognitive range, creativity, and experimental mindset. It briefly examines two of Leonardo's masterworks, the *Mona Lisa* and the *Vitruvian Man*, and then posits the *Vitruvian Man* as a visual illustration of an apex imaginator. Part III surveys the idea of T-shaped thinkers and the related "foxhog" model. Part IV recounts former Intel CEO Andrew Grove's sage advice on how knowledge entrepreneurs can navigate inflection points.[14] This Part also illustrates how to capitalize on these career inflection points by bolstering one's curiosity, cognitive range, and creativity—undergirded by emotional intelligence.[15]

Part V provides an action list for thinker-doers determined to become apex imaginators—a process that involves intentionally building new competencies, capabilities, and an entrepreneurial mindset (i.e., business acumen, street smarts, and strategic risk taking).[16] This Part then introduces the "slash" career artist concept as a strategy for designing and constructing a vocational path that provides meaning, dignity, and challenge. Finally, Part VI concludes by encouraging legal knowledge entrepreneurs to be like Leonardo—a Renaissance thinker-doer who agilely sought change and adventure.

---

[14] *See generally* ANDREW GROVE, ONLY THE PARANOID SURVIVE: HOW TO EXPLOIT THE CRISIS POINTS THAT CHALLENGE EVERY COMPANY AND CAREER 185, 189, 194–96 (1999) ("Just as a strategic inflection point marks a crisis point for a business, a career inflection point results from a subtle but profound shift in the operating environment, where the future of your career will be determined by the actions you take in response.").

[15] This graphic builds upon NYU Stern School of Business Professor Adam M. Brandenburger's powerful visualization of strategic inflection points published in 2013. *See* Adam Brandenburger, *Higher Education at a Strategic Inflection Point*, THE STERN OPPORTUNITY (Oct. 16, 2013), http://sternoppy.com/2013/10/higher-education-at-a-strategic-inflection-point/ [https://perma.cc/Y6NU-SC9B]; *see also* Hilary G. Escajeda, *Legal Education: A New Growth Vision, Part I—The Issue: Sustainable Growth or Dead Cat Bounce? A Strategic Inflection Point Analysis*, 97 NEB. L. REV. 628, 675–78 (2019) (citing, explaining, and reproducing the SIP graphic graciously provided by Professor Brandenburger).

[16] *See* CHARAN, *supra* note 13, at 23, 77; Nelson, *supra* note 6.

I. Modern Imagination & Apex Imaginators

This Part first explores the definition of imagination and identifies cognitive attributes exhibited by apex imaginators. It follows with a short study on how knowledge entrepreneurs—capable of harnessing and directing their curiosity, cognitive range, creativity, and emotional intelligence—will excel in an economy where human-AI teaming is the standard.

A. Imagination ⇨ Modern Imagination

The Merriam-Webster Dictionary describes imagination as:

- "the act or power of forming a mental image of something not present to the senses or never before wholly perceived in reality" and
- "creative ability."[17]

Until this century, these definitions reasonably captured the essence of imagination for individuals living and working in a mostly analog world where human cognition prevailed. But now these explanations show rust—calling for an updated definition for the modern era. A time where curious, cognitively diverse, and creative people work together with fast, data-driven synthetic intellects to not only understand, analyze, and solve problems but also to create art, science, products, and services. A modern definition of human imagination should, thus, reference:

- creativity, curiosity, and cognitive range;
- artistic-scientific-entrepreneurial vision;
- openness to experience;
- elastic, analogical, and "kaleidoscope thinking"[18];
- emotional intelligence; and
- technology competence.

Knowledge entrepreneurs who intentionally nurture these modern imaginative faculties will be best placed to seize opportunities in a dynamic economy because their diverse portfolios of knowledge and flexible skills complement the constrained capabilities of narrow and brittle synthetic intellects. By cultivating these uniquely human

---

[17] *Imagination*, MERRIAM-WEBSTER, https://www.merriam-webster.com/dictionary/imagination_[https://perma.cc/YU3D-7WV2] (last visited Apr. 26, 2022).

[18] *See infra* footnote 26.

skills, imaginative thinker-doers will "race with," instead of against, the machines in their work as future-focused knowledge entrepreneurs.[19] As discussed next, the term "apex imaginator" describes those wondrous humans possessing the skills trifecta of curiosity, cognitive range, and creativity—tempered with emotional intelligence.

Components of Modern Human Imagination

- **Openness to Experience**. In *Quirky: The Remarkable Story of the Traits, Foibles, and Genius of Breakthrough Innovators Who Changed the World*, New York University Professor Melissa A. Schilling explains that "[o]penness to experience reflects an individual's use of active imagination, aesthetic sensitivity (the appreciation for art and literature, for example), attentiveness to emotion, a preference for variety, and intellectual curiosity."[20] Further, smart creatives seem comfortable with ambiguity and find unusual and complex ideas fascinating. Professor Schilling also observes, "openness to experience is associated with divergent thinking and creativity."[21]
- **Elastic Thinking**. In *Elastic: Flexible Thinking in a Time of Change*, Leonard Mlodinow describes the following characteristics of elastic thinking:
    - An ability to "let go of comfortable ideas and become accustomed to ambiguity and contradiction";
    - "The capability to rise above conventional mindsets and to reframe the questions we ask";
    - An "ability to abandon ingrained assumptions and open ourselves to new paradigms";

[19] *See* ERIK BRYNJOLFSSON & ANDREW MCAFEE, THE SECOND MACHINE AGE: WORK, PROGRESS, AND PROSPERITY IN A TIME OF BRILLIANT TECHNOLOGIES 188–204 (2014) (positing the strategy of "racing with machines") [hereinafter BRYNJOLFSSON & MCAFEE, THE SECOND MACHINE AGE]; ERIK BRYNJOLFSSON & ANDREW MCAFEE, RACE AGAINST THE MACHINE 36 (2011) (writing that "some human workers may lose out in the race against the machine").

[20] MELISSA A. SCHILLING, QUIRKY: THE REMARKABLE STORY OF THE TRAITS, FOIBLES, AND GENIUS OF BREAKTHROUGH INNOVATORS WHO CHANGED THE WORLD 113–14 (2018).

[21] *Id.* at 114.

- "The propensity to rely on imagination as much as logic and to generate and integrate a wide variety of ideas"; and
- A "willingness to experiment and be tolerant of failure."[22]

- **Analogical Thinking**. In *Range: Why Generalists Triumph in a Specialized World*, David Epstein explains that "analogical thinking is the practice of recognizing conceptual similarities in multiple domains or scenarios that may seem to have little in common on the surface."[23] In a brutish world, disentangling and tackling wicked problems requires an ability to (1) think creatively and relationally, (2) consider both inside and outside views, and (3) devise and execute new strategies.[24]
- **Kaleidoscope Thinking**. In *Think Outside the Building: How Advanced Leaders Can Change the World One Smart Innovation at a Time*, Harvard Business School Professor Rosabeth Moss Kanter writes that "[i]nnovators shake up their thinking as though their brains are a kaleidoscope, permitting an array of different patterns out of the same bits of reality."[25] Professor Moss Kanter explains:

> [k]aleidoscope thinking is a way of constructing new patterns from the fragments of data available, patterns that no one else has yet imagined, because they challenge conventional assumptions about how pieces of the organization, the marketplace, or the community can fit together. Kaleidoscope thinking is systems thinking with a new twist.[26]

---

[22] LEONARD MLODINOW, ELASTIC: FLEXIBLE THINKING IN A TIME OF CHANGE 6 (2018).

[23] EPSTEIN, *supra* note 3, at 102–03.

[24] *Id.* at 104, 108.

[25] ROSABETH MOSS KANTER, THINK OUTSIDE THE BUILDING: HOW ADVANCED LEADERS CAN CHANGE THE WORLD ONE SMART INNOVATION AT A TIME 97 (2020).

[26] *Id.* at 97–98; *see* Rosabeth Moss Kanter, *The Enduring Skills of Change Leaders*, NHRD J., Nov. 2017, at 53, 56 ("Leaders need to develop what I call kaleidoscope thinking — a way of constructing patters from the fragments of data available, and then manipulating them to form different patterns."); *see also* Laura Seargeant Richardson, *The Kaleidoscope Mind: Some Easy Ways to Teach Creativity*, ATLANTIC (Nov. 26, 2011), https://www.theatlantic.com/entertainment/archive/2011/11/the-kaleidoscope-mind-some-easy-ways-to-teach-creativity/248790

> • **Technology competence**. Technology competence includes a general understanding of AI technologies (e.g., data, binary and quantum computing, and algorithms) and the use of data analytics to predict and assess situations, strategies, and potential outcomes.[27]

B. Apex Imaginator

As the definition of human imagination must expand to incorporate technological advances, the sources of thinking and imagination also require updates. According to the Merriam-Webster Dictionary:

- "Apex" refers to "the highest or culminating point" (e.g., career or mountain peak);[28]
- "Imaginator" describes "one that imagines" and "especially [] a person who creates (as an artistic or intellectual work)";[29]
- And, relatedly, the term "apex predator" describes "a predator at the top of a food chain that is not preyed upon by any other animal"[30] (e.g., bears, lions, tigers, sharks, and the Tyrannosaurus rex).

While the competition between organic and synthetic intelligence continues, it is worth remembering that homo sapiens have always been able to evolve to changing conditions. So, in the years ahead as human-machine teaming transforms the global economy, adaptable knowledge entrepreneurs will need to integrate multiple intelligences: intellectual (IQ), emotional (EQ), curiosity and questioning (CQ), artificial (AI),[31] and business savvy. To keep pace

---

[https://perma.cc/D7RR-RLN7] (explaining a "kaleidoscope mind" is "a type of mind that is agile, flexible, self-aware, and informed by a diversity of experiences"). Such mind is "able to perceive any given situation from a multitude of perspectives" and can "see patterns, connections, and relationships that more rigid minds miss." *Id.*

[27] Escajeda, *supra* note 7, at 455–65, 486–96.

[28] *Apex*, *supra* note 1.

[29] *Imaginator*, MERRIAM-WEBSTER, https://www.merriam-webster.com/dictionary/imaginator [https://perma.cc/5LFH-JR9F] (last visited Apr. 26, 2022).

[30] *Apex Predator*, MERRIAM-WEBSTER, https://www.merriam-webster.com/dictionary/apex%20predator [https://perma.cc/5QPR-VTWR] (last visited Apr. 26, 2022).

[31] Tomas Chamorrow-Premuzic, *Curiosity Is as Important as Intelligence*, HARV. BUS. REV. (Aug. 27, 2014), https://hbr.org/2014/08/curiosity-is-as-important-as-intelligence [https://perma.cc/KS8S-VQGF]; Mark A. Cohen, *Getting Beyond the Tech in Legal Tech*, FORBES (May 3, 2019, 7:57 AM),

with technology, future-focused knowledge professionals will need to reimagine and recalibrate their portfolio of skills. In such changing times, curious, cognitively broad, and creative thinker-doers capable of working with and augmenting the constrained capabilities of smart machines will enjoy economic power. These quirky and smart creative knowledge entrepreneurs will be in high demand—especially if they can integrate their IQ, EQ, and CQ with synthetic intelligence. Such value stems from humans' ability to ask intriguing and insightful questions while machines can only crunch data to calculate and predict answers.[32]

C. Curiosity, Cognitive Range, Creativity, and Emotional Intelligence

Summiting the top of the imaginative and cognitive food chain—and achieving apex imaginator status—requires an active mind fired by curiosity, cognitive range, and creativity. **Curiosity** is called the "knowledge emotion" because it seeks understanding by asking questions and pursuing mysteries while gravitating toward novelty and chasing after problems that appear impossible to solve.[33] Humans are curious; computers are not.

A person with **cognitive range** has a wide focus—and is averse to narrow thought silos.[34] Individuals with cognitive range broadly integrate facts, circumstances, emotions, and other diverse cultural and social inputs. They can tackle big picture, open-ended, and complex challenges. By contrast, current AI can only solve narrow and routine problems.[35]

Creativity springs forth from interconnected ideas, experiences, emotions, and imagination. Creative people find interesting associations between things not apparently related. Creativity is commonly associated with humans, as AI cannot (yet) generate

---

https://www.forbes.com/sites/markcohen1/2019/05/03/getting-beyond-the-tech-in-legal-tech/#4e81639c16fc [https://perma.cc/K9LK-2RCG].

[32] Escajeda, *supra* note 7, at 492–96; Kevin Kelly, *The Technium: A Conversation with Kevin Kelly*, EDGE (Feb. 3, 2014), https://www.edge.org/conversation/kevin_kelly-the-technium [https://perma.cc/VV57-GPSC] (As synthetic intellects further penetrate into all aspects of modern life, the wise words of Kevin Kelly ring true: "[m]achines are for answers; humans are for questions").

[33] Escajeda, *supra* note 7, at 490–94.

[34] Escajeda, *supra* note 7, at 479. *See generally* GILLIAN TETT, THE SILO EFFECT: THE PERIL OF EXPERTISE AND THE PROMISE OF BREAKING DOWN BARRIERS 250–54 (2016) (describing the benefits of questioning, deconstructing, reimagining, recombining, and inverting knowledge disciplines).

[35] Escajeda, *supra* note 7, at 455, 459–60, 469–74.

inspired ideas.[36] While the question of whether computers can ultimately be imaginative remains unanswered, savvy knowledge entrepreneurs will monitor such emerging capabilities and revamp accordingly. Further, as Fourth Industrial Revolution technologies transform the workplace and economy, visionary knowledge entrepreneurs will enjoy myriad professional opportunities. By comparison, humans whose work involves following humdrum rules and implementing routines may become redundant as increasingly capable smart machines take over such tasks.

Emotional intelligence bolsters an apex imaginator's curiosity, cognitive range, and creativity by zeroing in on tacit information, which may include the unsaid, unarticulated, and unconscious drivers of human behavior. Individuals with EQ then apply such tacit knowledge when observing and listening to customer concerns and then devise innovative products and services that address such challenges. At its core, successful knowledge entrepreneurship in an era of cognitive technologies requires us to create, nurture, and sustain the social connection and personal trust that AI cannot imitate, and machines cannot replicate.[37] As a result, emotionally intelligent knowledge entrepreneurs will enjoy ample work opportunities because they listen, observe, reflect, connect, and relate to others. In so doing, they can quickly identify, accurately gauge, and nimbly respond to fickle and impulsive humans.[38]

Dr. Daniel Goleman's *Harvard Business Review* article "What Makes a Leader?" identifies the following "hallmarks" of emotional intelligence: self-awareness, self-regulation, motivation, empathy, and social skills.[39]

---

[36] *Id.* at 486–90, 498–500.

[37] *See generally* Haley Hemen, *Profiles in Success: Jason St. Julien on the Importance of Connection*, COLO. LAWYER, Mar. 2022, at 50, https://cl.cobar.org/departments/davis-award-winner-jason-st-julien-on-the-importance-of-connection/ [https://perma.cc/PW3G-WCMH]; Joi Kush, *Colorado Bar Association President's Message: Transactionalism—Philosophical Musing of Legal Success*, COLO. LAWYER (Mar. 2022), https://cl.cobar.org/departments/transactionalism/ [https://perma.cc/BXY5-GVSN].

[38] HANNAH FRY, HELLO WORLD: BEING HUMAN IN THE AGE OF ALGORITHMS 61 (2018); *see also* Natalie Wolchover & Quanta Magazine, *Our Instructions for AI Will Never Be Specific Enough*, ATLANTIC (Feb. 1, 2020), https://www.theatlantic.com/technology/archive/2020/02/real-danger-artificial-intelligence/605914/ [https://perma.cc/T22L-8HYC] (reflecting on Stuart Russell's 2019 book *Human Compatible* and his concerns about AI systems working with humans who (1) do not know what they want, (2) behave irrationally, and (3) have changing preferences).

[39] Daniel Goleman, *What Makes a Leader?*, *in* HBR'S 10 MUST READS ON EMOTIONAL INTELLIGENCE 3 (Harvard Bus. Review ed., 2015) [hereinafter

Emotional Intelligence "Definitions and Hallmarks" (1996).[40]

	Definition	Hallmarks
Self-awareness	• Ability to understand how emotions, moods, and drives affect oneself and others	• Realistic self-assessment • Self-confidence • Self-deprecating sense of humor
Self-regulation	• Ability to think before acting and redirect or control impulses	• Comfort with ambiguity • Openness to change • Trustworthiness and integrity
Motivation	• Pursuing goals with determination and vigor • Passion for achieving goals that transcend money or status	• Achievement-oriented • Optimism, resilience, and grit
Empathy	• Ability to recognize and respond to the emotional state of others	• Cultural awareness • Service mindset
Social Skills	• Establishing and maintaining relationships • Willingness to find commonalities and build affinities between individuals and groups	• Leader or change manager • Persuasive • Team builder

Emotionally intelligent humans who are self-aware, motivated, socially adept, and empathetic also possess deep reservoirs of tacit knowledge. In 1966, British-Hungarian philosopher Michael Polanyi articulated his theory of tacit human knowledge by positing that "[w]e can know more than we can tell."[41] Polanyi's insight means that much of what we know or consider commonsense cannot be decomposed into discrete tasks, clear rules, and programmable routines that can, ultimately, be AI-ized. Thus, humans' natural ability to integrate tacit and explicit human knowledge foreseeably escapes AI's orbit—thereby granting a reprieve for knowledge entrepreneurs concerned about their professional futures.

Goleman, *What Makes a Leader?*]; *see generally* DANIEL GOLEMAN, EMOTIONAL INTELLIGENCE: WHY IT CAN MATTER MORE THAN IQ (10th Anniversary ed., Bantam Books 2005).

[40] Goleman, *What Makes a Leader?*, *supra* note 39, at 4-6.

[41] MICHAEL POLANYI, THE TACIT DIMENSION 4 (1966, 2009).

A Dead Salmon Is Dead No Matter What the Machine Says

Since machines lack commonsense, humans with such skills must supervise synthetic intelligence because "statistical correlations are a poor substitute for expertise."[42] The infamous "Dead Salmon" study provides a vivid example of data that reveals ludicrous patterns or "voodoo correlations." [43] In 2009, Dartmouth graduate student, Craig Bennet, put a dead salmon into an fMRI machine. The fMRI scan picked up data and patterns in the dead salmon's brain. While humans understand that this data did not indicate that the dead salmon was alive—instead, the data detected noise or digital junk—synthetic intelligence would not be able to make such a conclusion.[44]

Bottom line: Junk data can create junk knowledge by revealing meaningless patterns that may lead to trivial and potentially disastrous ideas and conclusions that rational and intelligent humans would immediately recognize and reject. Consequently, in a time where smart and fast machines process massive data flows, discerning and wise humans capable of reflection, reason, empathy, and judgment will need to remain in the loop because (1) machines lack

---

[42] GARY SMITH, THE AI DELUSION 130–31 (2018) ("The fundamental problem with data mining is that it is very good at finding models that fit the data, but totally useless in gauging whether the models are ludicrous."). Professor Smith emphasizes that because it is very "easy to find coincidental patterns and relationships," humans must be acutely aware of the possibility of "spurious correlations" and unreliable or even ridiculous computer models. *Id.*

[43] *Id.* at 116–17 (describing how the dead salmon study yielded "ludicrous relationships"); *see also* Alexis Madrigal, *Scanning Dead Salmon in fMRI Machine Highlights Risk of Red Herring*, WIRED (Sept. 18, 2009, 5:37 PM), https://www.wired.com/2009/09/fmrisalmon/__[https://perma.cc/BN27-RZXT] (noting that "fMRI data has a lot of natural noise"); Louisa Lyon, *Dead Salmon and Voodoo Correlations: Should We Be Sceptical [sic] About Functional MRI?*, 140 BRAIN: J. NEUROLOGY e53 (2017) (The "dead salmon paper" "show[s] the importance of paying careful attention to how functional MRI data are analysed [sic].") Lyon also noted that "[b]ad statistics lead to bad science." Lyon, *supra* note 43, at 53. Professor Smith observes how computers can efficiently discover "worthless patterns." SMITH, *supra* note 42, at 167. Professor Smith also states, "Artificial intelligence algorithms are very good at finding patterns in data, but they are very bad at assessing the reliability of the data and the plausibility of a statistical analysis." *Id.* at 149.

[44] Madrigal, *supra* note 43.

> discernment and commonsense, and, (2) as Mary Shelley articulated in *Frankenstein*, humans are always responsible for their engineered creations.[45]

Multiple productive paths presently exist for curious, cognitively diverse, creative, knowledgeable, and emotionally intelligent professionals capable of teaming with smart machines. By combining AI-robotic technologies and agile processes with human IQ, EQ, CQ, and commonsense, these knowledge entrepreneurs will invent breakthrough products and services, design dynamic business models, and build human-digital bridges that serve and benefit their communities.

Next, this Essay explores how Leonardo da Vinci's curiosity, cognitive range, creativity, and experimental mindset fueled his brilliance. Leonardo shows how we can intentionally expand and upgrade our minds—with the destination of apex imaginator status.

II. Leonardo da Vinci

In his book, *The Origins of Creativity*, two-time Pulitzer prize winner and Harvard Professor Emeritus Edward O. Wilson asserts, "science and the humanities share the same origin and brain processes of creativity."[46] Leonardo's work exemplifies this fusion of science and the humanities. In his sketches and paintings, Leonardo integrated science and art by uniting his keen powers of observation,

---

[45] MEREDITH BROUSSARD, ARTIFICIAL UNINTELLIGENCE: HOW COMPUTERS MISUNDERSTAND THE WORLD 118–19 (2018); SMITH, *supra* note 42, at 237; MARGARET LEVI, *Human Responsibility for Machines that Think*, *in* WHAT TO THINK ABOUT MACHINES THAT THINK 235, 235–36 (John Brockman ed., 2015). *See generally* MARY WOLLSTONECRAFT SHELLEY, FRANKENSTEIN: OR, THE MODERN PROMETHEUS 195–98 (James Rieger ed., 1974, 1982) (1818).

[46] EDWARD O. WILSON, THE ORIGINS OF CREATIVITY 81 (2017). Professor Wilson explains, "The two great branches of learning, science and the humanities, are complementary in our pursuit of creativity. They share the same roots of innovative endeavor. The realm of science is everything possible in the universe; the realm of the humanities is everything conceivable to the human mind." *Id.* at 3–4. Further, the humanities represent an "ensemble of disciplines that explain 'what it means to be human.'" *Id.* at 188. Wilson also asserts that science and humanities form a continuum and explains that science includes three levels: (1) "scientific observation [that] addresses all phenomena existing in the real world," (2) "scientific experimentation [that] addresses all possible real worlds," and (3) "scientific theory [that] addresses all conceivable real worlds." *Id.* at 186–87. He adds that the humanities go farther than these three levels of science because it encompasses "the infinity of all fantasy worlds." *Id.*

voracious curiosity, deep and broad cognitive range, extraordinary creativity, elastic mind, and ability to imagine and entertain the impossible. Because Leonardo was never satisfied with mastering just one discipline—he sought knowledge and expertise in multiple subject areas, and then tested the boundaries of these fields by rejecting thought silos.[47]

A. Leonardo's Curiosity, Cognitive Range, Creativity, and Experimental Mindset

Contemporary art scholars identify Leonardo's boundless curiosity about nature and science as the engine for his diverse and detailed study of machines, water, wind, fireflies, and plants; cadaver dissections and studies of human and animal anatomy; inspired drawings, paintings, and prototypes; innovative experiments with structure, form, and materials; and use of trailblazing artistic techniques, such as *chiaroscuro* and *sfumato*.[48] Stylistically, Leonardo consistently used *sfumato* to soften the hard lines depicting objects and infuse his paintings with drama, motion, and mystery. He intuitively knew that innovative ideas often emerge from the shadows and along the margins.[49] Leonardo's distinct style and artistic flair, coupled with his engaging personality and unmatched genius,

---

[47] TETT, *supra* note 34, at 14 (explaining that while specialization may initially produce near term efficiencies, such thought-work silos can become sclerotic and inefficient due to fragmentation, "tunnel vision," and "mental blindness, which causes people to do stupid things").

[48] Jeffrey Brown & Frank Carlson, *Blockbuster da Vinci Exhibition Showcases the Master's 'Endless Curiosity'*, PBS NEWSHOUR (Nov. 8, 2019, 6:35 PM), https://www.pbs.org/newshour/show/blockbuster-da-vinci-exhibition-showcases-the-masters-endless-curiosity [https://perma.cc/6RA7-8JVW] (describing how Leonardo based his paintings on scientific explorations and his continuous experimentation with techniques such as sfumato); WALTER ISAACSON, LEONARDO DA VINCI 122 (2017) (describing how Leonardo "was constantly experimenting with drawing methods"). Professor Isaacson explains that "Chiaroscuro, from the Italian for 'light/dark,' is the use of contrasts of light and shadow as a modeling technique for achieving the illusion of plasticity and three-dimensional volume in a two-dimensional drawing or painting." *Id.* at 41. "[*S*]*fumato* derives from the Italian word for 'smoke,' or more precisely the dissipation and gradual vanishing of smoke into the air." *Id.* Leonardo wrote, "'[y]our shadows and lights should be blended without lines or borders in the manner of smoke losing itself in the air.'" *Id.*

[49] *See* TETT, *supra* note 34, at 204, 221 (finding innovation occurs along the edges where thought silos breakdown). Similarly, the Cleveland Clinic's Dr. Toby Cosgrove states, "Innovation happens at the margins, where one discipline rubs up against the other." *Id.* at 204.

catapulted him into Renaissance superstar status. If Leonardo lived in the twenty-first century, he would likely shine in modern Silicon Valley—a place that exalts bold, heterodox ideas, values visionaries, and celebrates charismatic celebrities.[50]

Leonardo's open mind also embraced experimentation and skeptical inquiry. Unbound by formal education and traditional ways of thinking, his scientific studies relied on careful observation, pattern detection, analogical reasoning, and repetition.[51] Because Leonardo's insatiable curiosity crossed many disciplines, he developed a deep sensitivity to recurring patterns and intriguing occurrences that further kindled his theories and inquiries.[52]

In *Leonardo da Vinci*, Professor Walter Isaacson elegantly summarizes Leonardo's ability to engage between theory and experience by writing: "[b]ut [Leonardo's] uncanny abilities to engage in the dialogue between experience and theory made him a prime

---

[50] *See* EPSTEIN, *supra* note 3, at 164.

[51] *See generally* ISAACSON, *supra* note 48, at 394–424 (describing his anatomical explorations).

[52] *Id.* at 174–75 (discussing repeat testing), 519 (noting how pattern recognition fueled further inquiries); *see* PHILIP E. TETLOCK & DAN GARDNER, SUPERFORECASTING: THE ART AND SCIENCE OF PREDICTION 126–27 (2015) (referencing University of Pennsylvania Psychology Professor Jonathan Baron's research on "active open-mindedness"); *cf.* Donald J. Kochan, *Thinking Like Thinkers: Is the Art and Discipline of an "Attitude Suspended Conclusion" Lost on Lawyers?*, 35 SEATTLE U. L. REV. 1, 56 n.244 (2011) (explaining Professor Baron's "goal of teaching 'active open-mindedness'; that is, the capacity to thoughtfully consider arguments on multiple sides of an issue"). Psychologist Jonathan Baron argues "that one main problem with our thinking and decision making is that much of it suffers from a lack of *active open-mindedness*. We ignore possibilities, evidence, and goals that we ought to consider, and we make inferences in ways that protect our favored ideas." Peter H. Huang, *Achieving American Retirement Prosperity by Changing Americans' Thinking About Retirement*, 22 STAN. J.L. BUS. & FIN. 189, 250 (2017) (quoting JONATHAN BARON, THINKING AND DECIDING xiii (3d ed., 2000)). Leonardo employed pattern spotting and analogies to develop his "rudimentary method of theorizing." ISAACSON, *supra* note 48, at 31. Because real intelligence includes the ability to recognize and analyze the significance of situations and experiences, humans analogize to use the "familiar to recognize the unfamiliar." SMITH, *supra* note 42, at 23. According to Indiana University Professor of Cognitive Science and Comparative Literature Douglas Hofstadter, intelligence initially involves the collection and categorization of facts and experiences, followed by a fluid process of comparing, contrasting, and combining these inputs to form ideas and conclusions. *Id. See generally* DOUGLAS HOFSTADTER, GÖDEL, ESCHER, BACH: AN ETERNAL GOLDEN BRAID (1979) (Pulitzer prize-winning book); DOUGLAS HOFSTADTER & EMMANUEL SANDERS, SURFACES AND ESSENCES: ANALOGY AS THE FUEL AND FIRE OF THINKING (2013).

example of how acute observations, fanatic curiosity, experimental testing, a willingness to question dogma, and the ability to discern patterns across disciplines can lead to great leaps in human understanding."[53] In situations where he discovered conflicts between his theory and experience, Leonardo's flexible, creative, and scientific mind surrendered his preconceptions, revised his thinking, and developed new approaches to advance his understanding.[54]

Additionally, Leonardo used analogies when he discovered patterns—which also gave him greater insight. For instance, as part of his anatomy studies, Leonardo analogized the arteries and veins uncovered in his cadaver dissections to river flows and plant branches.[55] He then applied these analogical thinking skills in his studies of machines and the human body.[56] Like his intricate mechanical drawings, his illustrations of human body parts depicted magnified views, varied angles, and multiple, stacking layers—thus informing his masterworks.

B. Mona Lisa

Leonardo's enigmatic *Mona Lisa* blends scientific precision with artistic virtuosity. A careful study reveals a woman with expressive eyes and an elusive smile. Such motion, mystery, and drama springs from the combination of Leonardo's meticulous sketches of lips, mouth muscles, and nerves; the use of *sfumato*; the study of optics and illusions; and his sensitivity to Lisa del Giocondo's flickering thoughts and fleeting emotions.[57] Today, sightseers still debate whether she smiles or smirks—thus crystalizing her iconic status.[58]

---

[53] ISAACSON, *supra* note 48, at 176.
[54] *See id.* at 174–76.
[55] *Id.* at 174, 177.
[56] *Id.* at 176–78.
[57] Walter Isaacson, *The Science Behind Mona Lisa's Smile*, ATLANTIC (Nov. 2017), https://www.theatlantic.com/magazine/archive/2017/11/ leonardo-da-vinci-mona-lisa-smile/540636/ [https://perma.cc/PD4C EEC9].
[58] *See generally* ISAACSON, *supra* note 48, at 401–02, 413. Professor Isaacson writes, "One mark of a great mind is the willingness to change it." *Id.* at 435. Isaacson describes that Leonardo was "a good scientist" willing to "revise[] his thinking." *Id.* at 438. His explorations uncovered intriguing connections that guided subsequent inquiries, such as when he considered whether water eddies and air turbulence could explain how birds fly. *Id.* at 178. Leonardo wrote, "To arrive at the knowledge of the motions in birds in the air, . . . it is first necessary to acquire knowledge of the winds, which we will prove by the motions of water." *Id.* For Leonardo, the beauty and unity of nature's patterns revealed "essential truths" that propelled ongoing investigations. *Id.* Also, for further analysis of *Mona Lisa*'s smile, see ISAACSON, *supra* note

Leonardo's *Mona Lisa* (detail) (c. 1503–19).[59]

In his biography of *Leonardo da Vinci*, Professor Walter Isaacson admiringly describes this painting as "the culmination of a life spent perfecting an ability to stand at the intersection of art and nature."[60] He then notes that "the poplar panel with multiple layers of light oil glazes, applied over the course of many years, exemplifies the multiple layers of Leonardo's genius."[61] Five centuries later, the mysterious *Mona Lisa* still draws in curious viewers who find themselves mesmerized by the infinite wonders of Leonardo's imagination and his shadowy-explorations.[62]

As modern observers, we see that Leonardo manifested what we now call "perpetual beta" since he continuously studied and improved his masterwork, the *Mona Lisa*, until the very end of his life.[63]

48, at 488–90; Isaacson, *The Science Behind Mona Lisa's Smile*, *supra* note 57.

[59] *Mona Lisa – Portrait of Lisa Gherardini, Wife of Francesco del Giocondo*, LOUVRE, https://www.louvre.fr/en/oeuvre-notices/mona-lisa-portrait-lisa-gherardini-wife-francesco-del-giocondo [https://perma.cc/6UGV-LNWM] (last visited Apr. 26, 2022); *MonaLisa sfumato*, WIKIMEDIA COMMONS, https://commons.wikimedia.org/wiki/File:MonaLisa_sfumato.jpeg [https://perma.cc/6MCZ-2E5P] (last visited Apr. 26, 2022).

[60] ISAACSON, *supra* note 48, at 475.

[61] *Id.*

[62] *See generally id.* at 475–94 (describing the history of the Mona Lisa).

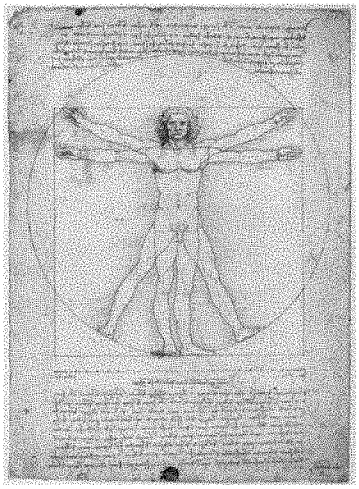
[63] *Cf.* SCOTT HARTLEY, THE FUZZY AND THE TECHIE: WHY THE LIBERAL ARTS WILL RULE THE DIGITAL WORLD 80 (2017) (quoting Matthew Brimer, founder

Professor Isaacson speculates that Leonardo could have spent another decade refining the *Mona Lisa* because "[r]elinquishing a work, declaring it finished, froze its evolution."[64] For Leonardo, his always-evolving work provided him with not only more learning opportunities but also another brushstroke, or a fresh vantage point, might bring his picture closer to his goal—perfection.[65]

C. Vitruvian Man

Leonardo's pen and ink masterpiece, the *Vitruvian Man*, further embodies an apex imaginator—and for this reason, we now direct our gaze to this pen and ink masterpiece.

Leonardo's *Vitruvian Man* (c. 1487)[66]



Even though we only have access to a digital facsimile of this masterpiece, a close look reveals a man in constant motion stretching his body to its limits.[67] His arms extend and reach outward and upward, his legs shift between a vertical position and a wide stance, and his fingers stretch and push to touch both the circle and square. By depicting the *Vitruvian Man* as a man of action, Leonardo's pen

---

of General Assembly) (stating, in this time of rapid technology evolutions, "'your education should always be in beta,' the engineering term for 'a work in progress' product").

[64] ISAACSON, *supra* note 48, at 518.

[65] *See id.*

[66] *Vitruvian Man*, WIKIMEDIA COMMONS, https://commons.wikimedia.org/wiki/File:Vitruvian.jpg [https://perma.cc/M7X4-VJ7C] (last visited Apr. 26, 2022).

[67] ISAACSON, *supra* note 48, at 156–57.

tests the limits of the paper's ordinary freeze-frame. For knowledge entrepreneurs, the *Vitruvian Man* serves as a visual model to push, stretch, and always move forward.

Perhaps astute viewers noticed that the horizontally outstretched arms on a figure with firm vertical footing make the shape of a "T." Although not expressly derived from Leonardo's sketch, since the early 1990s, "T-shaped" thinkers have been identified as extraordinary problem solvers.[68] The next Part examines these T-shaped cognitive superpowers.

III. T-shaped Thinkers and Foxhogs

The term "T-shaped person" describes ranged thinkers because they can cogitate broadly and deeply.[69] An understanding of T-shaped thinkers begins by imagining the letter "T," where the horizontal stroke encompasses broad and diverse knowledge and human skills, and the vertical central-stroke of the "T" includes narrow and uniform expertise and abilities—potentially within the grasp of AI technologies. Conversely, an "I-shaped person" possesses narrow and deep knowledge—cognitive functions likely within AI's ambit.[70]

In his 2016 *TEDx Talk*, "Turning Innovation From Luck to Skill," Dr. Andy Ouderkirk, 3M Senior Scientist, describes "T-shaped People and Teams," as those who have four capabilities: (1) mastery and depth (expertise); (2) range, which includes curiosity, breadth, and making creative connections; (3) abilities for domain-specific critical and wide "systems thinking"; and (4) commitment to personal goals or organizational outcomes.[71] He then describes a T-shaped person as having wide-stretched arms, indicating breadth and curiosity with the legs representing deep domain expertise and critical thinking skills.[72]

---

[68] *See* EPSTEIN, *supra* note 3, at 207 (describing I and T-shaped thinkers). *See generally* Escajeda, *supra* note 15, at 750 (crediting David Guest with originating the 1991 T-shaped model concept); PETER ROGERS & RICHARD J. FREULER, THE "T-SHAPED" ENGINEER 5 (June 14, 2015), https://peer.asee.org/the-t-shaped-engineer [https://perma.cc/M25Y-BZWG].

[69] EPSTEIN, *supra* note 3, at 207 (explaining that a T-shaped person is someone with a wide range of knowledge and is not siloed into a specific career or thought discipline). *See also* LESLIE, *supra* note 9, at 152–53 (describing T-shaped knowledge and thinkers).

[70] *Id.* (explaining that an I-shaped person has deep knowledge and subject matter expertise).

[71] Andy Ouderkirk, *Turning Innovation From Luck to Skill*, YOUTUBE (Dec. 14, 2016), https://www.youtube.com/watch?v=yy6rVrYeT0A (starting at approximately minute 12:57). While Dr. Ouderkirk does not use the word "range," the skills he describes constitute range.

[72] *Id.* (starting at approximately minute 14:15).

For over a decade, IBM thought-leaders have also recognized the value of T-shaped professionals who holistically merge "traditional left-brain analytical capabilities with right-brain synthesis skills."[73] In a 2009 article describing "IBM's Role in Creating the Workforce of the Future," IBM leaders emphasized the importance of being "interdisciplinary[] rather than narrowly-focused specialists."[74] Under IBM's model, T-shaped thinkers possess deep subject-matter expertise (vertical axis of the T) paired with broad understandings of complementary disciplines (horizontal axis of the T).[75] These T-shaped thinkers can then synthesize their knowledge depth and cognitive range to identify "contextual linkages," effectively collaborate with members of cross-disciplinary teams, continuously modify their visions and goals, rapidly respond to change, and break down thought silos.[76] Consequently, T-shaped thinkers are labeled as "[t]he most valuable twenty-first-century workers."[77]

The natural world similarly exhibits animal generalists and specialists. In *Superforecasting: The Art and Science of Prediction*, Professor Philip E. Tetlock and journalist Dan Gardner borrow philosopher Isaiah Berlin's nicknames "hedgehogs" and "foxes" to describe an array of thinking styles.[78] A hedgehog describes someone who specializes in one "big thing" and often has both deep and narrow views.[79] By contrast, a fox knows "many little things" because it integrates many ideas and inputs, values information diversity, and accepts uncertainty and inconsistency.[80] A fox also synthesizes ideas and information from many disparate sources, thus enabling it to "aggregate perspectives."[81] In short, hedgehogs represent narrowness; foxes embody breadth.[82]

---

[73] BEYOND IT, IBM, IBM'S ROLE IN CREATING THE WORKFORCE OF THE FUTURE 2, 5 (2009), http://service-science.info/wp-content/uploads/2010/10/2009_06-IBM-workforce.pdf.

[74] *Id.* (referencing "Executive Summary").

[75] *Id.*

[76] *Id.*

[77] LESLIE, *supra* note 9, at 152 (referencing IBM's "T-shaped knowledge" model and identifying such skills as the "most valuable" in the modern workplace).

[78] TETLOCK & GARDNER, *supra* note 52, at 69 (explaining that Berlin based his observations from the 2,500-year-old poetry of Greek poet Archilochus: "The fox knows many things but the hedgehog knows one big thing."). "Hedgehogs" represented the "Big Idea experts" and "foxes" describe more "eclectic experts." *Id.* Tetlock and Gardner also describe how foxes can "aggregate perspectives." *Id.* at 74, 77.

[79] EPSTEIN, *supra* note 3, at 221.

[80] *Id.*; TETLOCK & GARDNER, *supra* note 52, at 74

[81] TETLOCK & GARDNER, *supra* note 52, at 74, 77.

[82] EPSTEIN, *supra* note 3, at 221.

Ian Leslie's book, *Curious: The Desire to Know and Why Your Future Depends on It*, expands this discussion of the Fox-Hedgehog spectrum by asserting that "[t]he thinkers best positioned to thrive today and in the future will be a hybrid of these two animals"—that is, a "foxhog," or T-shaped thinker.[83] Leslie argues that foxhogs will succeed in a competitive, technology-driven, and information-saturated marketplace—they have in-depth knowledge in one or two domains; they think eclectically and elastically; they consider diverse perspectives; and they collaborate with colleagues in other disciplines.[84] In a progressively digital—eventually quantum—and global world, knowledge entrepreneurs must be foxhogs.[85] These intellectually dexterous thinkers employ their conceptual reasoning skills to dance lyrically across knowledge domains and unite far-reaching ideas when discovering connections, making abstract associations, applying emotional intelligence, and identifying inventive solutions to wicked problems.[86]

Further, there is a need for multidisciplinary and collaborative problem solvers as cognitive technologies shift problem-solving into hyper-speed.[87] To effectively partner with smart machines, these thinker-doers should also strive to be apex imaginators, capable of (1) understanding and integrating multifaceted problems; (2) imagining pathbreaking processes and paradigms; (3) designing flexible business models; and (4) building technologies, products, services, organizations, and infrastructure that both care for the environment and improve humans' quality of life.[88]

The T-shaped and foxhog models demonstrate how modern-knowledge professionals should intentionally expand and nurture the unique human combinations of curiosity, cognitive range (depth and

---

[83] LESLIE, *supra* note 9, at 151–55; *see* TETLOCK & GARDNER, *supra* note 52, at 79 (noting that the "fox/hedgehog model is not a dichotomy. It is a spectrum," and that some people may be "hybrids" in that they are closer to one end of the spectrum than the other, for example "fox-hedgehogs" or "hedgehog-foxes.").

[84] LESLIE, *supra* note 9, at 151-52.

[85] *See id.* at 151-55.

[86] *See* EPSTEIN, *supra* note 3, at 47. Referencing the perspectives of Professor James Flynn, Epstein writes "*everyone* needs habits of mind that allow them to dance across disciplines." *Id.* at 49.Conceptual reasoning skills include the ability to "connect new ideas and work across contexts." *Id.* at 53.

[87] Westfahl & Wilkins, *supra* note 8, at 1671.

[88] *See generally* James Manyika & Stuart Russell, *How to Ensure Artificial Intelligence Benefits Society: A Conversation with Stuart Russell and James Manyika*, MCKINSEY GLOBAL INST. (Jan. 31, 2020), https://www.mckinsey.com/featured-insights/artificial-intelligence/how-to-ensure-artificial-intelligence-benefits-society-a-conversation-with-stuart-russell-and-james-manyika; ZUCKERMAN, *supra* note 8, at 245.

breadth), creativity, and emotional intelligence. By so doing, these T-shaped knowledge professionals will flourish in a dynamic digital economy where human-machine teaming represents the standard operating procedure.

IV. Career Inflection Points

This Part explores strategies for how knowledge entrepreneurs[89] can emotionally, intellectually, creatively, and economically prosper in a time where digital disruption represents the norm. Former Intel CEO Andrew Grove's book, *Only the Paranoid Survive*, illuminates the forward path. Grove explains that the term "inflection point" describes a volatile and uncertain time where flexibility and innovation—instead of rigidity and tradition—can yield professional dividends.[90] Surviving such an inflection point involves three steps: (1) clarity on career trajectory, (2) conviction and determination in goal achievement, and (3) resolute movement to spot and seize the next opportunity.[91]

Grove's description of agile and resilient thinker-doers evokes Leonardo's *Vitruvian Man* in action—stretching, reaching, and adjusting to shifting surfaces.[92] Though separated by more than five centuries, Leonardo's work and Grove's insights demonstrate the importance of curiosity, cognitive range, creativity, and deliberate forward movement. Both impart shared lessons for knowledge entrepreneurs—scour the margins and shadows for obscured opportunities; build and strengthen one's skills and competencies; welcome smart risks; move quickly to seize emerging prospects; acclimate to fluid conditions; and keep moving, as sitting still equals stagnation.

The graphic below illustrates how to navigate career inflection points by synthesizing Leonardo and Grove's shared lessons. The bottom left shows the upward trajectory for building career knowledge and skills. Approximately midway, the state of one's career or education encounters an inflection point—where gravity takes hold unless there is a countervailing force that propels continued

---

[89] *See supra* note 5.

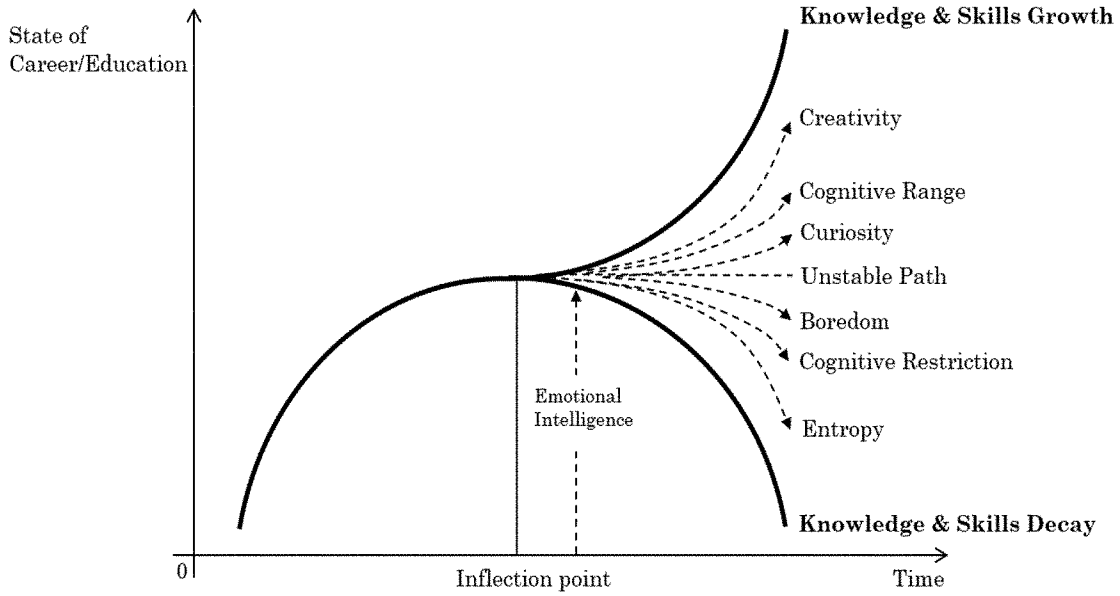
[90] GROVE, *supra* note 14, at 3, 32-35, 185, 194–96 (defining a strategic inflection point as "a time in the life of a business [industry or career] when its fundamentals are about to change"). Grove explains, "Just as a strategic inflection point marks a crisis point for a business, a career inflection point results from a subtle but profound shift in the operating environment, where the future of your career will be determined by the actions you take in response." *Id.* at 189.

[91] Escajeda, *supra* note 7, at 502.

[92] *Id.* at 516.

ascending growth. The skills trifecta of curiosity, cognitive range, and creativity represent upward vectors. By contrast, if the downward gravitational pull of boredom, cognitive restriction, or entropy gains traction, knowledge and skills decay result.

Navigating Career Inflection Points[93]



Next, focus on the dashed, upwards arrow immediately right of the inflection point, which represents emotional intelligence. Because AI lacks emotional intelligence, humans will foreseeably remain essential cognitive partners. [94] By deploying their IQs, EQs, and CQs, people can inject details, psychological dimensions, commonsense, and moral-ethical reflection into the question-asking, decision-

---

[93] This graphic builds upon NYU Stern School of Business Professor Adam M. Brandenburger's powerful visualization of strategic inflection points published in 2013. *See* Brandenburger, *supra* note 15; *see also* Escajeda, *supra* note 15, at 678 (citing, explaining, and reproducing the SIP graphic graciously provided by Professor Brandenburger).

[94] *See* Susan David & Christina Congleton, *Emotional Agility: How Effective Leaders Manage Their Negative Thoughts and Feelings*, *in* HBR'S 10 MUST READS ON EMOTIONAL INTELLIGENCE 119, 120 (2015) (explaining that individuals with "*emotional agility*" approach their inner experiences in "mindful, values-driven, and productive way"); Megan Beck & Barry Libert, *The Rise of AI Makes Emotional Intelligence More Important*, HARV. BUS. REV. (Feb. 15, 2017), https://hbr.org/2017/02/the-rise-of-ai-makes-emotional-intelligence-more-important.

making, and problem-solving process.[95] Only homo sapiens can integrate the uniquely human skills of curiosity, cognitive range, creativity, tacit and explicit knowledge, and emotional intelligence. This is good news because our status as thinking partners mostly remains secure if we—like Leonardo—achieve apex imaginator status.

V. Apex Imaginator Action List

For knowledge entrepreneurs at the beginning or mid-point of their careers, Grove identifies three steps for navigating the uncertainty of industry and career inflection points.

Step 1: Develop clarity for career trajectory;

Step 2: Build new competencies and capacities; and

Step 3: Embrace knowledge entrepreneurship to spot and seize the next opportunity.[96]

Cultivating the competencies and capacities to propel upward career progression begins once we have a plan for where we are heading. As Grove warned, these two remaining steps demand conviction, focused determination, and resolute advancement.[97] Specifically, developing such skills and capabilities require committing to lifelong learning and upskilling; embracing a self-employment mindset; and being gritty, resilient, and agile. In an era of digital disruption and economic restructuring, we must apply these new skills and steer our careers based on the possibilities presented—not as they were in the past.

A. Build New Competencies and Capacities

Recall how the muscular figure in Leonardo's *Vitruvian Man* physically stretches and habituates to unstable surfaces, thereby manifesting both core strength and stability. Achieving apex imaginator status, likewise, demands a strong and agile mind that exhibits these modern thinking and imaginative qualities:

- creativity, curiosity, and cognitive range;
- artistic-scientific-entrepreneurial vision;
- openness to experience;
- elastic, analogical, and "kaleidoscope thinking;"

---

[95] *See generally* Escajeda, *supra* note 7.
[96] GROVE, *supra* note 14, at 189, 194–96.
[97] *Id.*

- emotional intelligence;
- technology competence; and
- entrepreneurial mindset (business acumen and strategic risk-taking).[98]

Because developing these thinking-imaginative capacities and skills require cognitive training and conditioning, the following six-point action list is helpful for those determined to become apex imaginators. First, as knowledge entrepreneurs, we must be learning machines committed to lifelong learning and upskilling (i.e., perpetual beta).[99] This means that we must continuously augment our work skills and expand our curiosity, cognitive range, and creativity. As smart machines become more capable and ubiquitous, we must intentionally nurture our emotional intelligence—which currently remains outside the reach of AI technologies. By doing so, we can effectively integrate our natural IQ, EQ, CQ, and commonsense with AI predictions to formulate effective problem-solving strategies.

We must also accept the reality that the knowledge and work skills we developed in our 20s may be irrelevant by age 35 or 40.[100] Tax writer and Ernst & Young principal Tony Nitti, CPA, recently wrote how many of the professionals he encounters feel that "as their career progresses, their substance is not keeping pace with their title. And that (rightfully) scares the hell out of them."[101] According to Nitti, achieving and staying at the top of your career game as a subject matter expert requires work, which may involve going back to school

---

[98] *See supra* notes 18-27 and accompanying text.

[99] *See* FARAI CHIDEYA, THE EPISODIC CAREER: HOW TO THRIVE AT WORK IN THE AGE OF DISRUPTION 213 (2016); Mark A. Cohen, *Upskilling: Why it Might Be the Most Important Word in the Legal Lexicon*, FORBES (Sept. 3, 2019, 5:49 AM), https://www.forbes.com/sites/markcohen1/2019/09/03/upskilling-why-it-might-be-the-most-important-word-in-the-legal-lexicon (describing how lawyers need to learn new skills to adapt to the "tectonic shift[s] in the workplace caused by technology"); HARTLEY, *supra* note 63, at 80 (explaining that our knowledge development should be viewed as "a work in progress" that should be continuously expanded and upgraded).

[100] THOMAS H. DAVENPORT, THE AI ADVANTAGE: HOW TO PUT THE ARTIFICIAL INTELLIGENCE REVOLUTION TO WORK 145 (2018). Professor Davenport quotes Bob Kegan, Harvard professor of adult learning, on the need for lifelong learning: "[t]he time it takes for people's skills to become irrelevant will shrink. It used to be 'I got my skills in my 20s; I can hang on until 60.' It's not going to be like that anymore. We're going to live in an era of people finding their skills irrelevant at age 45, 40, 35." *Id.*

[101] Tony Nitti, *The Five New Year's Resolutions Every Tax Pro Should Make*, FORBES (Jan. 1, 2020, 8:12 AM), https://www.forbes.com/sites/anthonynitti/2020/01/01/the-five-new-years-resolutions-every-tax-pro-should-make/#32686b5019a1.

and spending nights and weekends studying.[102] Echoing what Leonardo knew five hundred years ago—and a core message of this Essay—knowledge yields opportunities.

Second, having adopted a self-employment and knowledge entrepreneur mindset, we will continuously scan for emerging opportunities; develop, expand, and maintain market-valued expertise and skills; embrace mobility; take calculated risks; build and protect our reputations and brands; and sign on for temporary "tours of duty" to bolster our competencies and capacities.[103] As lifelong learners, we will take responsibility for our professional development, and, ideally, an employer will pay for training that expands our expertise and skills for partnering with synthetic intellects.[104] If not, we should self-fund this upskilling because human capital investments in knowledge upgrade our cognitive range and enhance our market value. By investing in ourselves, we create "portable

---

[102] *Id.*

[103] CHIDEYA, *supra* note 99 99, at 47-48. Chideya quotes Austan Goolsbee, formerly the chair of the Council of Economic Advisers under President Obama and currently a professor at the University of Chicago:

> "In the future, where there's going to be a lot of mobility, . . . the willingness of people to want to invest in things [like skills training] that only work at one employer is going to go down. But at the same time, the willingness of employers to invest in job training when they're offering even general skills that you can pack up and take somewhere else is also going to go down."

Id.; Reid Hoffman et al., *Tours of Duty: The New Employer-Employee Compact*, HARV. BUS. REV. (June 2013), https://hbr.org/2013/06/tours-of-duty-the-new-employer-employee-compact (distinguishing between "lifetime *employment*" and "lifetime *employability*" and explaining that tours of duty may last between two and four years). They assert that the "tour-of-duty approach can boost both recruiting and retention." *Id.* They write, "The key is that it gives employer and employee a clear basis for working together. Both sides agree in advance on the purpose of the relationship, the expected benefits for each, and a planned end." *Id.*

[104] Bernard Marr, *The Top 10 Artificial Intelligence Trends Everyone Should Be Watching in 2020*, FORBES (Jan. 6, 2020, 12:18 AM), https://www.forbes.com/sites/bernardmarr/2020/01/06/the-top-10-artificial-intelligence-trends-everyone-should-be-watching-in-2020/#7d60088d390b (predicting that "by 2025, 75% of organizations will be investing in employee retraining in order to fill skill gaps caused by the need to adopt AI"). *See generally* Bryan Hancock et al., *Getting Practical About the Future of Work*, MCKINSEY Q.(Jan. 30, 2020), https://www.mckinsey.com/business-functions/organization/our-insights/getting-practical-about-the-future-of-work (describing the importance of adapting and updating skills in a fast-moving digital economy).

equity," which enables us to have more control over our lives and careers.[105]

Third, as knowledge entrepreneurs and chief executive officers of our economic enterprise, we must be gritty, resilient, and agile. In *Grit: The Power of Passion and Perseverance*, University of Pennsylvania Professor of Psychology Dr. Angela Duckworth asserts that the "combination of passion and perseverance" equals grit.[106] Individuals with grit have a "ferocious determination" to achieve their goals.[107] Dr. Duckworth writes, "Grit is about holding the same top-level goal for a very long time."[108] Especially in times of social, economic, and technology instability (i.e., inflection point), knowledge entrepreneurs understand the need to gather their grit into continuous career-building action that generates virtuous momentum.

Fourth, long-term career advancement requires resilience. Resilience means the ability to handle stress—without breaking—and adjust to change or recover from misfortune.[109] Despite hardships, resilient people maintain their self-worth and optimistic outlook.[110] They possess an inner strength that enables them to bounce back when surprises (good or bad) occur and from "fumbles or outright

---

[105] SALLY HOGSHEAD, RADICAL CAREERING: 100 TRUTHS TO JUMPSTART YOUR JOB, YOUR CAREER, AND YOUR LIFE (2005) ("Radical Truth #44: Portable Equity is the Only Form of Job Security Today."); *see also, e.g.*, Orly Mazur, *Taxing the Robots*, 46 PEPP. L. REV. 277, 282 (2019) (advocating for updated public policies that "provide a substantial investment in human capital"). *See generally* Lilly Kahng, *Who Owns Human Capital?*, 94 WASH. U. L. REV. 607 (2017); GARY S. BECKER, HUMAN CAPITAL: A THEORETICAL AND EMPIRICAL ANALYSIS, WITH SPECIAL REFERENCE TO EDUCATION (1964).

[106] ANGELA DUCKWORTH, GRIT: THE POWER OF PASSION AND PERSEVERANCE 8 (2016). Dr. Duckworth's research shows that people with grit exhibit four "psychological assets": (1) intense interest, (2) consistent practice (discipline), (3) purpose and the conviction that the endeavor matters, and (4) hope and resilience. *Id.* at 91–92.

[107] *Id.* at 8.

[108] *Id.* at 64. Seattle Seahawk's coach, Pete Carroll, describes "grit" as a "life philosophy" that directs and organizes all of one's everyday activities. *Id.*at 61-62, 64.

[109] CHIDEYA, *supra* note 99, at 160; *see also Resilience*, MERRIAM-WEBSTER, https://www.merriam-webster.com/dictionary/resilience (last visited May 7, 2022). *See generally* CAROL S. DWECK, MINDSET: THE NEW PSYCHOLOGY OF SUCCESS (2006).

[110] CHIDEYA, *supra* note 99, at 160. Chideya, journalist and former Distinguished Writer in Residence at New York University, writes, "in the world of jobs and our psyches, resiliency often means evolving into a *new* form. We don't just return to who or what we were. We often find strength in new jobs and careers, tapping into what we have done, finding new focus, and sometimes returning to aspects of ourselves long dormant." *Id.*

mistakes."[111] Harvard Business School Professor Rosabeth Moss Kanter explains that after such setbacks, resilience gradually appears in actions such as achieving a goal or making a contribution, which reduces the sting of the past and engenders excitement about what comes ahead.[112] In this time of digital disruption and economic reshuffling, standing still is not an option; we must remain resilient to keep pace with smart machines.

Fifth, like Leonardo, we must be agile, in constant motion, always stretching, and nimbly balancing on switching surfaces. As Leonardo understood five hundred years ago, career success and economic well-being involve pairing creativity with hustle to get the job done. Further, because work often involves bumpy and non-linear progressions, the most successful knowledge entrepreneurs "are the ones who realize the rules are in constant flux and that you set them yourself."[113] Agility enables us to identify and respond to varying situations and vague circumstances, see and seize new market opportunities, and create and deliver value to clients.

Sixth, when navigating inflection points, we must be gritty thinker-doers with emotional intelligence. As such, we can identify and meet our personal and career goals and deploy our observational skills to spot and seize promising professional opportunities—often obscured in shadows and hidden along the margins. Additionally, like Leonardo, we must be agile and resilient knowledge entrepreneurs who move quickly, anticipate and assume evolving conditions, and forge opportunities as "slash" career artists.[114]

B. Embrace Knowledge Entrepreneurship

Leonardo's work displayed his zeal for art, engineering, science, and invention. Rather than limiting himself to a single trade, Leonardo successfully pursued multiple vocations or "slash" careers

---

[111] Rosabeth Moss Kanter, *Surprises Are the New Normal; Resilience Is the New Skill*, HARV. BUS. REV. (Jul. 17, 2013), https://hbr.org/2013/07/surprises-are-the-new-normal-r [https://perma.cc/PKH8-69VS].

[112] *Id.*; *see also* CHIDEYA, *supra* note 99, at 170, 174 (being resilient fuels continuous forward motion and self-evolution, even during times when progress stalls or obstacles appear).

[113] CHIDEYA, *supra* note 99, at 166, 179 ("Achieving satisfaction in a time of disruption and episodic careers is about seeking opportunity and *seeing* opportunity. You can make new choices and create new paths for yourself, but only if you can perceive them first."); *see also* Hoffman et al., *supra* note 103 (stating that, in a dynamic, digital, and global economy, "[a]daptability and entrepreneurship became key to achieving and sustaining success").

[114] MARCI ALBOHER, ONE PERSON/MULTIPLE CAREERS: THE ORIGINAL GUIDE TO THE SLASH CAREER xiv (2012).

as an artist/engineer/scientist/inventor.[115] Leonardo was the quintessential knowledge entrepreneur because he earned a living by leveraging and combining his ideas and insights—modernly called, business acumen[116]—with his artistic genius. In addition to his artistic masterpieces, Leonardo produced a wide variety of other work products, including military weapons, fortifications, and maps for the Duke of Milan, Ludovico Sforza, and Cesare Borgia.[117] He always hustled to engineer solutions and invent new technologies. By knowing and responding to his patrons' (client) needs, he imagined the future and made the once impossible, possible—though some of his inventions such as flying machines (helicopters) and scuba equipment only became viable technologies centuries later.[118]

Although other Renaissance artists shared Leonardo's experimental mindset, adaptability, and willingness to seek new adventures, Leonardo's distinct style justifies pause and reflection.[119] In particular, his paintings and drawings frame the personal and professional challenges that modern-knowledge entrepreneurs must balance—that is, whether to welcome ambiguity and flexibility or seek clarity and structure. When sketching and sculpting our careers, we need to harmonize these tensions and develop our signature styles, which may include conscious decisions to (1) imagine and explore the margins and shadows where pristine—but uncertain—economic

---

[115] *See id.*

[116] *See* COPE, *supra* note 6, at 2 (defining business acumen); CHARAN, *supra* note 13, at 33 (describing how those individuals with business acumen understand the "fundamental building blocks of moneymaking"); *see also* Joe Jones, *Business Acumen: More Than Just Business Knowledge*, SHRM (Mar. 11, 2016), https://www.shrm.org/resourcesandtools/hr-topics/organizational-and-employee-development/pages/business-acumen-more-than-business-knowledge.aspx (explaining that "business acumen" incorporates a broad set of skills, knowledge, and understandings such as an enterprise's operations/functions, the relevant industry's competitive environment, awareness of emerging trends and issues, and technology proficiency).

[117] *Leonardo Da Vinci, First Milanese period (1482–99)* and *Second Florentine period 1500–08)*, ENCYCLOPAEDIA BRITANNICA, https://www.britannica.com/biography/Leonardo-da-Vinci#ref219075; https://www.britannica.com/biography/Leonardo-da-Vinci/Second-Florentine-period-1500-08 (last visited May 7, 2022).

[118] ISAACSON, *supra* note 48, at 353–54; *see* SCHMIDT & ROSENBERG, *supra* note 7, at 11 (observing that the once impossible may become possible later).

[119] By contrast, Leonardo's artistic rival, Michelangelo Buonarroti (1475–1564), "favored a *disegno* based on outlined contours" to define the characters and objects in his paintings. ISAACSON, *supra* note 48, at xii, 374–77. Isaacson distinguishes between the different schools of Florentine art: (1) sfumato and chiaroscuro (Leonardo's approach), and (2) defined contours (Michelangelo's approach). *Id.* at 376–77.

opportunities may exist, or (2) build skills for traditional endeavors with well-lit and clear boundaries. No matter the path selected, we should adopt a test-and-learn approach, pivot as circumstances dictate, and actively look for and seize emerging growth opportunities.[120] Further, we must continuously develop and maintain in-depth knowledge and understanding of our practice area and update our technology skills to team effectively with synthetic intelligence tools so that we continue to drive knowledge advancements and deliver customer value. Unlike machines, we can importantly build client relationships—learn and understand our clients' personal values and economic goals—so that we can understand, anticipate, and respond to their needs. Since humans—not machines—can develop trust, create connections, and imagine solutions that align with the clients' goals and ideals, these skills remain outside of AI's reach.

On top of this, we must imagine how our work and industry will evolve in the future—and adapt and seize opportunities accordingly![121] In his fascinating "Off the record" article series about trailblazing legal knowledge entrepreneurs, Alex Su identifies three key themes that emerged from his study of lawyers who "took the road less traveled and ended up having a huge impact."[122] First, knowledge entrepreneurs spot emerging opportunities, heed hunches, change course, tolerate uncertainty and risk, employ creative strategies, and gather their grit to do the work they feel called to do.[123] Second, knowledge entrepreneurs "[r]un towards the edge of an evolving space," identify and fill market gaps, and develop valuable industry knowledge and skills to become essential thinker-doers in dynamic

---

[120] CHARAN, *supra* note 13, at 61 (describing his "Growth Box" analytic tool which is divided into four quadrants to evaluate new and existing customers, current and emerging market opportunities, and present and potential profits). Specifically, the Growth Box evaluates customer type (new or existing) and customer needs (new or existing). *Id.*

[121] *Id.* at 97 ("Stop looking in the rearview mirror and imagine what will happen in the future.")

[122] Alex Su, *How to Go Off the Beaten Path: A Summary*, OFF THE RECORD (Jan. 16, 2022), https://itsofftherecord.substack.com/p/how-to-go-off-the-beaten-path-a-summary; *see also* Alex Su, *Taking Matters Into Your Own Hands: How Belinda Johnson Ended Up as COO of Airbnb*, OFF THE RECORD (Jan. 4, 2022), https://itsofftherecord.substack.com/p/belindajohnson (describing Ms. Johnson's gritty determination to build a career in emerging technology companies).

[123] Su, *supra* note 122, *How to Go Off the Beaten Path: A Summary* (Theme "#1: If you have a feeling that you're working at the wrong place, change your job").

startups.[124] And third, knowledge entrepreneurs actively cultivate industry connections, seek out opportunities that value their "developed expertise," and take calculated risks to build extraordinary careers.[125]

As twenty-first-century knowledge entrepreneurs, we understand that, since synthetic intelligence cannot think abstractly, analogize, hypothesize, idealize, reason, or imaginatively solve problems, these cognitive functions presently remain in the exclusive jurisdiction of the human mind.[126] Accordingly, to achieve apex status, we must develop and continuously upgrade our unique portfolios of market-valued cognitive-emotional services that only we (humans) can sell to clients. Adhering to Andrew Grove's sage advice that "only the paranoid survive," we will remain mindful that "history—and ordinary human life—is full of opportunities missed by not

---

[124] *Id.*; *see also* Alex Su, *Go Where You're Needed: How Joe Tsai Made Himself Indispensable & Incredibly Wealthy Along The Way*, OFF THE RECORD (Jan. 9, 2022), https://itsofftherecord.substack.com/p/go-where-youre-needed-how-joe-tsai (recounting how tax associate Joe Tsai quit Big Law for a general counsel position at a now defunct investment firm—but those experiences provided him with industry insights and connections to become a cofounder of then startup Alibaba); Alex Su, *Making Things Happen As An Outsider: SCOTUSblog & The Genius of Tom Goldstein*, OFF THE RECORD (Dec. 25, 2021), https://itsofftherecord.substack.com/p/making-things-happen-as-an-outsider (describing how SCOTUSblog founders Tom Goldstein and Amy Howe, husband and wife, recognized and filled a gap in the media landscape).

[125] Su, *supra* note 122, *How to Go Off the Beaten Path: A Summary*; *see also* Su, *supra* note 122, *Taking Matters Into Your Own Hands: How Belinda Johnson Ended Up as COO of Airbnb* (describing how Ms. Johnson took the risk to work initially as a free consultant to Airbnb which led to her rising to Chief Operating Officer); Su, *supra* note 124, *Go Where You're Needed: How Joe Tsai Made Himself Indispensable & Incredibly Wealthy Along The Way* (recounting how former Big Law tax associate Joe Tsai make enough money from the Alibaba IPO to buy an NBA team).

[126] Scott Atran, *Are We Going In the Wrong Direction?*, *in* WHAT TO THINK ABOUT MACHINES THAT THINK 220, 221 (John Brockman ed., 2015) ("[I]f the current focus in artificial intelligence and neuroscience persists, . . . I don't think machines will ever be able to capture (imitate) critically creative human thought processes, including novel hypothesis formation in science or even ordinary language production."). He explains,

> Newton's laws of motion or Einstein's insights into relativity meant imagining ideal worlds without precedent in any past or plausible future experience, such as moving in a world without friction or chasing a beam of light through a vacuum. Such thoughts require levels of abstraction and idealization that disregard, rather than assimilate, as much information as possible to begin with.

Id.

recognizing that change has occurred, and that the previously unthinkable is now doable."[127] Therefore, we fully understand that only the nimble and adaptable will thrive. Fortunately, the supple wetware in our brains can program (and reprogram) itself by continuously envisioning clever concepts, altering approaches, adjusting to dynamic conditions, designing new paradigms to solve problems, and spotting and then seizing emerging opportunities.[128]

Leonardo's flexible approach to his career, thus, offers a constructive model for twenty-first-century workers with unique and broad human knowledge and skills that complement machines with narrow and brittle intelligence.[129] Like Leonardo, we can put our curious, cognitively diverse, imaginative minds to work—building meaningful, dignified, satisfying, and intellectually stimulating careers.

Last, being like Leonardo requires a fundamental reinvention and expansion of how we think of ourselves. For example, instead of narrowly thinking and defining oneself as a litigator or transactional attorney, a Leonardo-rebooted self-description will meld one's professional abilities with one's passions for art, dance, and downhill skiing (i.e., tax lawyer/artist/dancer/skier). The takeaway is that human flourishing in the Fourth Industrial Revolution requires that we honor and recognize the value of our whole beings—especially our quirky curiosities, cognitive range, natural creativity, diverse hobbies, commonsense, and emotional intelligence. Put simply, to thrive in an era of synthetic intelligence, we must become apex imaginators capable of nimbly racing with, instead of against, smart machines.[130]

---

[127] MLODINOW, *supra* note 22, at 130–31.

[128] *See* FUENTES, *supra* note 11, at 20 (noting that "[l]iving organisms change and adapt, or they fail to and suffer the consequences"); COLEMAN, *supra* note 2, at 220 ("We know today that our brains are neuroplastic and that we can rewire ourselves and our thinking."); MLODINOW, *supra* note 22, at 84, 92 (referencing Thomas Kuhn's "paradigm shift" concept articulated in his book, *The Structure of Scientific Revolutions*).

[129] Jason Ponton, *Greedy, Brittle, Opaque, and Shallow: The Downsides to Deep Learning*, WIRED, Feb. 2, 2018, 8:00 a.m., https://www.wired.com/story/greedy-brittle-opaque-and-shallow-the-downsides-to-deep-learning/?redirectURL=/story/greedy-brittle-opaque-and-shallow-the-downsides-to-deep-learning/. [https://perma.cc/4JCM-F5WN] (last visited May 26, 2022). *See also* CHIDEYA, *supra* note 99, at 23, 46; MELANIE MITCHELL, ARTIFICIAL INTELLIGENCE: A GUIDE FOR THINKING HUMANS 39-40 (2019).

[130] BRYNJOLFSSON & MCAFEE, THE SECOND MACHINE AGE, *supra* note 19, at 188–204 (positing the strategy of "racing with machines"); BRYNJOLFSSON & MCAFEE, RACE AGAINST THE MACHINE, *supra* note 19, at 36 (writing that "some human workers may lose out in the race against the machine").

Conclusion

As human-machine teaming becomes standard operating procedure, apex imaginators will use their uniquely human thinking superpowers—curiosity, cognitive range, creativity, and emotional intelligence—to imagine, design, and deliver valued goods and services. As essential partners with synthetic intellects, these exceptional humans will remain in the loop because they can solve complex and intertwined problems—presently outside the grip of AI.

Because homo sapiens are "buggy" and complicated, high social and market prestige awaits smart, creative knowledge entrepreneurs capable of uniting their IQ, EQ, CQ, and commonsense with AI predictions.[131] The high-status of these thinker-doers stems from their ability to not only team with synthetic intellects, but also their ability to understand and relate to other humans. In contrast to sterile silicon data-driven machines, these knowledge entrepreneurs can foster customer connection, trust, and loyalty—an ever-growing rarity in a fast-moving, global, impersonal, and digital world.

A survey of Leonardo da Vinci's creative process yields valuable insights for modern-knowledge entrepreneurs. Like Leonardo, twenty-first-century professionals find themselves in an era of technological, social, and economic transformation. In such times, we must set aside our familiar tools and black-and-white thought palette—and instead, embrace new technologies, colors, theories, and approaches. Although our work products will likely never match the genius of Leonardo's *Vitruvian Man* or his *Mona Lisa*, future-focused knowledge entrepreneurs can still create meaningful and dignified careers, deliver valuable products and services, employ workers, and contribute to community social, economic, and environmental well-being. Being like Leonardo calls one to get up, stand tall, build muscle, stretch brain synapses, balance on shifting surfaces, and always move forward—just like the *Vitruvian Man.*

Now, onward!

---

[131] Michael I. Norton, *Not Buggy Enough*, *in* WHAT TO THINK ABOUT MACHINES THAT THINK 475, 475–76 (John Brockman ed., 2015) (concluding that "it's the bugs that make us—and any form of intelligence—human").