ENERGY OBSERVER
A MONTHLY NEWSLETTER FROM AMERLUX®

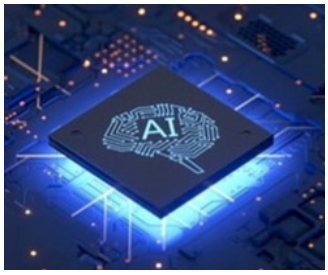
FEB 2025

Amerlux - Bluetooth Commercial Lighting

Install wireless open-protocol Bluetooth lighting control without additional wiring or excessive commission costs - Free your next project from the pricey commissioning fees that make facility managers shake in their shoes.
So simple to use and easy to install, Amerlux's open-protocol Bluetooth lighting control connects your lighting and other non-proprietary Bluetooth-enabled devices under a single wireless network without additional wiring.
Adding a new light and any open-protocol device—HVAC, security and automated blind control included, regardless of their manufacturer—has never been simpler. Just open your app to commission, not your budget.
Take the guesswork out of wireless controls and finally install a secure, reliable lighting control that's easy to use and love.
Turn any installation into a wireless smart lighting solution - Connect an entire space, floor or building with total harmony. Amerlux's open-protocol Bluetooth drivers, sensors and app provide simple, scalable, wireless lighting control from a single device. No need to run additional wiring and conduit through multiple walls and ceilings. Always select the most optimal lighting component on hand, no matter the manufacturer. Ensure continuous compatibility and connectivity under a single open-protocol Bluetooth lighting network.

Speak to an Expert.

National LED Market Observer



1. **Why Amazon, Microsoft, Google and Meta are Investing in Nuclear Power** - Tech leaders are exploring nuclear power as a solution to the massive energy needs of their data centers, sustainability challenges, and the growing demands of their AI initiatives. SMRs, a new type of nuclear reactor, are gaining attention for their ability to provide round-the-clock power with minimal emissions. As some of the largest energy users, major tech companies are investing in these reactors, which could play a key role in global energy transformation. A must watch video: Why Amazon, Microsoft, Google and Meta are investing in nuclear power | Watch

2. **Passenger Screening: Reimagining Imaging at the Airport** - In 2024, TSA screened three million people in a single day for the very first time. With unprecedented numbers of travelers passing through airports, S&T is focused on improving the airport experience of the future so passengers can move to their destinations with ease. New and retrofitted passenger screening systems are currently being tested at S&T's Transportation Security Laboratory (TSL) in Atlantic City, New Jersey. The S&T Screening at Speed Program, in collaboration with TSA, is developing new concepts and technologies to help the Department of Homeland Security (DHS) meet the needs of passengers while also fine-tuning detection performance, so TSA continues to stay ahead of evolving threats and keep the traveling public safe. High Definition-Advanced Imaging Technology (HD-AIT) is the backbone of this development. Passenger Screening: Reimagining Imaging At The Airport

3. **Constellation Energy Awarded More Than $1B in Government Contracts** - Constellation Energy signed two contracts awarded by the U.S. General Services Administration (GSA) worth more than $1 billion. The contracts are to supply power to more than 13 government agencies and perform energy savings and conservation measures at five GSA-owned facilities in the Washington, D.C. region. One of them is a 10-year, $840 million contract, the largest in GSA history. Through this contract, Constellation will supply more than 1 million megawatt hours of nuclear energy annually to various government agencies beginning in 2025. The second is a $172 million contract to enhance energy efficiency. decrease emissions and save on energy costs at five government facilities through upgrades like LED lighting, electric boilers, heat pumps, upgraded HVAC and building control equipment. Constellation Energy awarded more than $1B in government contracts - Daily Energy Insider

4. **AI-Driven Electronics Design by N. Mughees** - The use of generative artificial intelligence (AI) for designing and manufacturing electronic circuits is changing the game by making it possible to develop modern, high-quality products. Electronics manufacturers are improving efficiency of their products by leveraging AI tools throughout the production process, starting from initial design to final quality checks. Generative AI can quicky do the manual time-consuming work, saving time and money of the clients.AI can detect and fix process irregularities, routing errors, and quality control, which is an essential part of producing electronics. This AI-integration is crucial for maintaining standards in sectors where traditional quality checks are expensive and time-consuming. AI-driven electronics design | Electronics360

5. **Deals on Leases Drive EV Market by Christopher Otts** - Toyota Motor's only electric vehicle widely on sale in the U.S. starts at about $37,000. But practically nobody plunks down that much for the mid size SUV, named bZ4X. "Almost everyone leases the car," Toyota U.S. sales chief David Christ said in a re cent interview. "You'd be a fool not to." The Japanese-made SUV, which qualifies for a $7,500 federal subsidy only if it is leased, illustrates a broader shift in the way car companies are marketing electric cars to consumers, with more-afford able monthly payments and no long-term commitment. People who leased the Toyota in 2024 paid $445 a month on average, compared with $717 for those who financed the car through a purchase loan, according to credit bureau Experian. WQWLtBjXe8K8Ki1Y3MfL-WSJNewsPaper-1-13-2025.pdf

6. **High-Tech Partnership Invests $500 Billion in AI** - President Donald Trump on Tuesday talked up a joint venture investing up to $500 billion for infrastructure tied to artificial intelligence by a new partnership formed by Sam Altman of OpenAI, Larry Ellison of Oracle, and Masayoshi Son of SoftBank.The new entity, Stargate, will start building out data centers and the electricity generation needed for the further development of the fast-evolving AI in Texas, according to the White House. The initial investment is expected to be $100 billion and could reach five times that sum. "This will be the most important project of this era," said Altman, CEO of OpenAI. The White House has put an emphasis on making it easier to build out new electricity generation in anticipation of AI's expansion, knowing that the United States is in a competitive race against China to develop a technology increasingly being adopted by businesses. High-Tech Partnership Invests $500 Billion in AI – electrifiED

Global LED Energy Market Observer:

7. **Ireland Embraced Data Centers That Now Consume Too Much Energy by Matt O'Brien** - Dozens of massive data centers humming at the outskirts of Dublin are consuming more electricity than all of the urban homes in Ireland and starting to wear out the warm welcome that brought them here. Now, a country that made itself a computing factory for Amazon, Google, Meta, Microsoft and TikTok is wondering whether it was all worth it as tech giants look around the world to build even more data centers to fuel the next wave of artificial intelligence. Fears of rolling blackouts led Ireland's grid operator to halt new data centers near Dublin until 2028. What other countries can learn from Ireland's experience is to carefully manage the effect of data centers on the stability of the electricity system.
Ireland Embraced Data Centers That Now Consume Too Much Energy – electrifiED

8. **2025's Energy Crossroads: 6 Trends Redefining the Global Power Sector** - The report prominently highlights new uncertainties embedded in volatile shifts in power demand and supply dynamics, an ever-more urgent need for grid modernization, and the growing precariousness of supply chains amid geopolitical tensions.

1. Electricity Demand Is Set to Skyrocket. Can the Grid Keep Up?
2. Energy Security Ever-More Dependent on Electricity.
3. Pressure Is Mounting to Sustain Adequate Power Supply.
4. Natural Gas Demand Rising, but Long-Term Role Uncertain.
5. Supply Chain Risks—the Achilles' Heel of the Clean Energy Transition.
6. China Is Now an Undeniable Influential Powerhouse.

Sonal Patel is a POWER senior editor. 2025's Energy Crossroads: 6 Trends Redefining the Global Power Sector

9. **Global Electric Vehicle Sales Up 25% in Record 2024 by Alessandro Parodib** - Global sales of electric and plug-in hybrid vehicles were up 25% to more than 17 million units in 2024, driven by strong performance in China and a stabilized European market, according to research outfit Rho Motion. China saw a 36.5% increase in EV sales, while the US and Canada reported an 8.8% rise. Global electric vehicle sales up 25% in record 2024 | Reuters

10. **EXKA Selects Sollum's Dynamic LED Grow Light Solution for Enhanced Cannabis Production** - Sollum Technologies is pleased to announce that EXKA, a leading cannabis producer in Québec, Canada, has chosen Sollum's cutting-edge dynamic LED grow light solution as part of the expansion of their state-of-the art greenhouse facilities in Mirabel. This partnership marks a significant milestone in EXKA's production capabilities, with the company increasing its greenhouse footprint by 50%. This decision reflects EXKA's commitment to leveraging advanced and sustainable lighting strategies to boost production efficiency and crop quality.

[News] EXKA Selects Sollum's Dynamic LED Grow Light Solution for Enhanced Cannabis Production - LEDinside

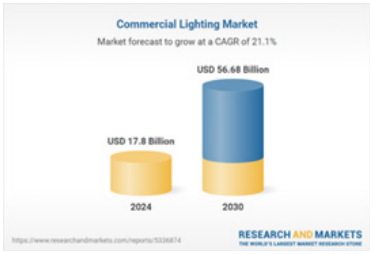
Industry Resources:

11. **Artificial intelligence: Tools & Tips for Lighting Professionals** - Thursday, February 27, 12:00pm (ET) | Register here Speaker: Mark Lien Sponsored by ALUZ Artificial Intelligence (AI) is growing in its power over our lives and accelerating into the marketplace at unprecedented speed. It can suck us into endless YouTube videos and social media engagement, often with nothing of value to show for our time. The lighting community needs to use AI for good while minimizing its negative impact on us. Hundreds of new tools are available to us for marketing, design, manufacturing, collaboration, developing AI agents, consumer education and more. Attend this session to identify the best of them, what is coming and how we can help to safeguard ourselves and our businesses while utilizing these helpful new tools. Educational Webinars - Illuminating Engineering Society

12. **Lessons Learned in Problem Solving, Historic Renovation, Office Design, and Neuroarchitecture by Jeanette Fitzgerald Pitts** - Innovative materials, unique circumstances, new design approaches, and the demand for people-first workspaces are pushing architects into new frontiers. In many cases, completed projects can serve as excellent teaching tools for demonstrating what can be accomplished architecturally in a space and how to best accomplish it. This course explores some of the lessons learned during the recent completion of several different types of projects and includes tips for creating workspaces that boost wellbeing by applying the principles of neuroarchitecture through the use of art, color, lighting and design. AIA CES Provider statement: Endeavor Business Media is a registered provider of AIA-approved continuing education under Provider Number 10084542. Credits: 1.0 AIA LU/HSW Lessons Learned in Problem Solving, Historic Renovation, Office Design, and Neuroarchitecture - Architecture & Design Master Continuing Education

13. **Lighting Revolution in Two Graphs: LED Distribution in Residential and Commercial Applications by Craig DiLouie** - As the LED revolution achieves increasing adoption, a recent report by the Department of Energy illuminates the growth. Published in April 2024, the "2020 U.S. Lighting Market Characterization" https://tinyurl.com/3fczwe9s estimates technology distribution among the U.S. installed base of units (lamps/luminaires), along with energy consumption. **Residential sector**: Let's start with the residential lighting sector, where an estimated 6.5 billion units are installed, accounting for 80% of lighting installations. LED was the most popular light source in 2020 with 3.1 billion units installed or 48% of the total, nearly 50% less energy than in 2015 **Commercial buildings**: In the commercial building sector, with its estimated 1.6 billion installed units, we see a similarly striking snapshot of LED earning virtual parity with other light sources. In 2020, LED reached an overall share of 48% of the installed base and a rough parity with fluorescent, nearly 30% less energy than 2015 and 57% less than 2001. Again, LED adoption is today the majority light source in commercial buildings. Lighting Revolution in Two Graphs: LED distribution in residential and commercial applications - Electrical Contractor Magazine

14. **Commercial Lighting Market to Reach $56 Billion by 2030** - Research and Markets has published a new analysis, Commercial Lighting Market.....Forecast 2025-2030. The 187-page document covers key factors driving the growth of the commercial lighting market sector (including fixtures for hospitality, retail, workspaces, and more applications), which reached over $17 billion in 2024 and is expected to grow at a CAGR of more than 20% in the coming years. The analysis forecasts that the market will reach over $56 billion by 2030 due to increased sustainability efforts, including a focus on human-centric adaptive lighting, adoption of smart lighting and retrofitting infrastructure, as well as the acceleration of urbanization. The analysis provides information on market restraints, such as the maintenance of fixtures, as well as market opportunities, such as solar lighting solutions, in addition to the PESTLE (political, economic, social, technological, legal and environmental) factors that influence market data. To find the full report: Commercial Lighting Market by Offering, Installation Type, Communication Technology, End-use Application, End-User - Global Forecast 2025-2030



15. **University of Colorado Boulder – Professional Lighting Education** - The University of Colorado Boulder is pleased to announce that registration is now open for the 2025 Rocky Mountain Lighting Academy (RMLA) Short Course. This four-day course will be held on the beautiful CU campus in Boulder from May 29 through June 1, 2025. General sessions cover lighting and design fundamentals along with the latest developments in technology, color, and health. Technical Track students dive deeper into photometry, optics, and luminaire design while Design Track students gain practical experience with the early stages of the design process, including developing design concepts and goals. The course emphasizes hands-on learning experiences, and the class size is limited to ensure a fun, interactive experience. Further details and registration information can be found on the program's website. For more information, please contact Bob Davis, Scholar in Residence and Director of Professional Lighting Education, davisrg@colorado.edu

16. **2024 State of the Cannabis Lighting Market by Jolene Hansen** - There's no doubt that the relationship between cannabis and light is one of the most crucial aspects of cannabis cultivation and ultimate success. From light intensity to spectral properties, to light uniformity, to dimming technology and much more, every new discovery in the cannabis industry opens another door for growers, researchers, and lighting manufacturers to explore. In this 2024 "State of the Cannabis Lighting Market" report, you'll find exclusive data revealing practices of your cannabis cultivation peers, with valuable insights into the evolution of cannabis lighting trends through the years. The study behind this report was made possible with support from Fluence and was conducted by third-party research organization Readex Research on behalf of Cannabis Business Times. **Click here for a PDF of the full report**. 2024 State of the Cannabis Lighting Market report on lighting trends and benchmarks among commercial cultivators | Cannabis Business Times

17. **In This Month's Issue of Electrical Contractor's Lighting Special Report (Digital Edition)**

- Light a Bridge Over Shreveport Waters: Feazel Electrical Contracting
- Designing for End-of-Life: What to do with LEDs when the light goes out
- Tis the Season! McWilliams Electric
- Watt Comes Next? A roundtable discussion on LED lighting
- Lights, Prefab, Installation! Assembling and wiring lighting off-site eases pressures
- The Power of Workplace Lighting: Harnessing circadian and natural light for well-being
- Featured Products: Luminaires
- Fiber Optics: Jumping Through Hoops
- Cool Tools: Working Lights for Electricians
- Service/Maintenance: A Great Holiday Gift
- Code Applications: Emergency and Critical Power Systems

https://www.ecmagdigital.com/ecmag/library/item/electrical_contractor_december_2024/4239628/

18. **The Value of Dimming by Levin Nock** - It's easy to see the energy benefits of dimming: the more an LED fixture is dimmed, the less electricity it uses. In terms of future-proofing the energy savings of lighting projects, the longevity of LED products makes it paramount to strengthen requirements for dimmability and other lighting control strategies now, since LEDs installed today are expected to work for a decade or more. The latest version of the DesignLights Consortium's (DLC) Solid-State Lighting (SSL)Technical Requirements stresses the importance of dimming as a way to increase energy savings, while allowing occupants of offices, conference rooms and other spaces to adjust light levels to their comfort or needs. All LEDs are inherently able to dim and nearly 100% of DLC-listed fixtures are dimmable. Expanded adoption is the necessary next step to capturing the benefits of dimming. The Value of Dimming | EC&M

19. **The Lagging Transition to LEDs in Schools — Part 3 by Jessica Kelly, Andrea Wilkerson, Dan Blitzer** - Parts 1 and 2 of this series discussed the sluggish adoption of LED technology in schools and the dim prospects for fluorescent lighting. This final part addresses the LED choices school facility personnel are considering and the new tradeoffs they face. Based on PNNL's conversations with schools, the change to LEDs is underway. Upgrading lighting can reduce energy consumption and operating costs and refresh the look and feel of the school. Fluorescent lighting has served schools for a long time. What does maintaining an LED system look like for the next 30 or 40 years? While TLEDs seem like an easy solution today, relying on fluorescent luminaires and other components will become more challenging in the future. Compare the up front and ongoing costs for each LED option and consider developing a "standard" lighting solution that can be repeated over time, space by space, or school by school. The Lagging Transition to LEDs in Schools — Part 3 | EC&M

Monthly Feature:

Where Humans Still Have the Edge on AI by Marc Zao-Sanders, www.marczaosanders.com

Since ChatGPT's launch two years ago, generative AI (gen AI) has been promising to reshape how work gets done. The use cases are many and varied, and we're still discovering what's going to work best, for us as individuals, in teams, and as organizations. In a surprising twist, it's the white-collar work of the office that seems to be more imminently replaceable than the blue-collar work of the field and factory.

Gen AI has several attributes that we humans lack. It's always on. It draws on a vast segment of the web. It generates output instantly. It can scale endlessly. This new era of AI can feel intimidating for the limited, lumbering life forms that created it. We now need to look harder to see where our unique value still lies. Where Humans Still Have the Edge on AI

Areas Where AI Has Already Surpassed Human Capability

Silicon-based intelligence has improved substantially over the past few decades. Long before the arrival of LLMs and gen AI, AI had surpassed humankind in many specific areas:

- Checkers (1994)
- Chess (1996)
- Passable language translation (2006)
- Handwriting recognition (2014)
- Reading comprehension (2017)
- Conversational response (2023)
- Human-level language translation (2024)

We don't know which domains AI will dominate next, but candidates include fully autonomous (level 5) driving, surgery, writing a bestselling book, developing AI systems themselves, and the holy grail: artificial general intelligence (AGI) — the term popularized by Shane Legg referring to AI achieving human-level proficiency across a wide range of cognitive tasks. With the heightened current media and investment interest, it's clear that AI progress will continue in some vein. What, then, might be difficult for AI **for** the foreseeable future? What moat can humans continue to own and defend?

Areas Where Humans Still Have an Edge Over AI

In speaking to hundreds of experts, consumers, and skeptics of AI over the past few years, four strongholds for humans keep coming up:

- **Emotion**: Understanding, connecting with, and responding sensitively to human feelings.
- **Complexity**: Navigating ambiguous, broad-context challenges with holistic problem-solving.
- **Physicality**: Tasks requiring dexterity and interaction with the physical world, particularly where human presence and responsiveness matter.
- **Creativity**: The ability to generate original, novel ideas and solutions.

Let's look at each one in turn.

Emotion

Humans are still the world experts when it comes to soft skills. Gen AI can convincingly and usefully mimic some of what we have thought, felt, and said about empathy, ethics, negotiation, etc. Some people are even starting to use AI for therapy and companionship. But for most of us, with our unfathomably nuanced individual circumstances, we still look to another person to understand us best. A human expert, friend, or colleague is also more likely to give unfiltered, contrarian, surprising, or even controversial opinions — and in many situations, this will be a lot more useful than safe, generic, clinical machine output.

Humans also have the advantage of being interesting to other humans. We've evolved to pay attention to what other human beings think, feel, say, and do. This is the value and impact of the human-interest story and has been the fuel and the fire of social media for two decades. We love sports, music, and comedy because of the people that play, perform, and make us laugh. An AI-generated forehand, pop song, or joke — however objectively good — doesn't and won't make the same impact. After AI unequivocally demonstrated its superiority over all human chess players, interest in chess continued, but that interest has been in the exciting fallibility of human play, not the soulless perfection of machine games. Human skills that remain valuable (for now) include: persuasion, self-awareness, ethics, listening, storytelling, and sales.

Complexity

The world is still too complex for AI. AI has dominated humans in well-defined, limited, controlled arenas such as the boards of checkers, chess, and Go. AI and gen AI also perform well with a second wave of technical skills in broader domains. The frontier models can predict code snippets as developers type, generate code to solve problems, translate code between programming languages, fix bugs, and write supporting documentation. They can produce marketing copy and legal documents, and streamline financial accounting. But the world is full of much harder problems than these. Climate change, poverty, social justice, business strategy — described as "wicked problems" by professors Horst Rittel and Melvin Webber in a 1973 article in Policy Sciences magazine — require an understanding of data drawn from a range of contexts. AI can't yet read across such disparate domains.

Indeed, Meta's chief AI scientist, Yann LeCun, and other AI luminaries have argued that because gen AI is trained only on text (albeit vast amounts of it), which is a measly subset of the data that human beings are able to draw on — such as our DNA encoding, sensory and embodied experiences of the world, emotions, etc. — we can't expect it to make much headway with the complex, wicked problems we face. Human skills that remain valuable (for now) include: complex problem-solving, sense-making, risk management, strategy, vision, and intuition.

Physicality

Gen AI doesn't interact directly with the physical world.

If you need to send a letter, put up a shelf, show the new employee around the office, or look someone in the eyes in a negotiation, gen AI can't do it for you.

Robots will take a while. Experts say it will be a decade before we have robots at home. Even Elon Musk, one of the world's most enthusiastic and influential robotics champions, concedes that it will be 2040 before they're ubiquitous. Fully autonomous cars have certainly taken much longer than Musk and others once predicted.

And there are some professional interactions for which the human physical touch is a hard prerequisite. Care workers, chefs, athletes, nurses, waste collectors, hairdressers, and craftspeople have to be somewhere, doing something in the real world, to add their much-needed value. Human skills that remain valuable (for now) include: dexterity, body language, physical strength, balance, coordination, tactile sensitivity, poise, and hand-eye coordination.

Creativity

If we're training our AIs on data the world has already seen, isn't it hard for the technology to generate anything truly novel? Of course, gen AI can produce a sentence, paragraph, or image the world has never seen before. But can it bring about authentic creativity — output that is new in a way that stirs us and feels important to us? Despite the fanfare surrounding the launch of new AI media-generating technologies, we don't care much for it as consumers. Spotify now includes AI music in its catalog, but all the big hits are by flesh-and-blood musicians. Very few people are watching AI-generated films, nor do they want to. And although an AI-generated painting recently sold for $1 million, it's a long way off the $450 million paid for da Vinci's Salvator Mundi. We value history and scarcity, and these two qualities are beyond AI.

High-quality writing is safe, too — for now. Trained substantially on a couple of decades of web-based content marketing, gen AI can't help but produce undistinguished prose. Articles on this very website are still written and edited by human experts. I wrote a book in 2023, the year ChatGPT captured the world's attention, and for a week or two (around the time GPT-4 was released), I became concerned that my effort, along with all future human literary endeavors, would be rendered futile. That worry was short-lived as the actual quality of gen AI writing became apparent. Nicholas Thompson, The Atlantic's CEO, describes the challenge and opportunity for journalism: to "...make and create the stories that are hardest for LLMs to create...stories with new facts, based on human reporting, that are written with style and that are complex."

Collaborating with AI

How humans and machines can best work together. Notice that human creativity often draws on the other three categories — emotion, complexity, and physicality. Our proudest achievements in science, music, architecture, engineering, and other essential fields have always demanded a depth of feeling and thought, along with dexterity and industry. What could be more human? John Ruskin, the nineteenth-century English polymath, once defined fine art — arguably the epitome of human creativity — as "that in which the hand, the head, and the heart of man go together." Human skills that remain valuable (for now) include: imagination, ideation, aesthetic judgment, lateral thinking, artistic expression, and curiosity.

How Humans and AI Can Complement Each Other

Taking your skills in one or more of the directions above will help make sure that your contributions are not replicable by gen AI. But there's a nuance that should bring further comfort and success. The choice between us and AI is not binary. AI can augment human capability, and vice versa. That's a more precise and productive way of viewing what's possible already. For example, a government advisor may use meteorological data from AI systems as an input for a complex geopolitical decision. A care worker might use AI-based language translation to better connect with their patient. AI can also help augment human creativity and idea exploration: the 2024 Nobel Prize in Chemistry went to Demis Hassabis and John Jumper for their and their AI model's (AlphaFold2) ability to predict proteins' complex structures.

The potential of this fusion of human and AI capabilities becomes clearer when we take a more forensic view of skills. It's mostly at the task or sub-task level where human contribution may become obsolete. AI can't yet replace whole skills (let alone whole jobs). Take, for example, the writing of a blog. We can prompt gen AI to write the entire piece and achieve a certain, limited standard of output. But expert bloggers will use gen AI for much smaller legs in the writing journey — for example, to provide a selection of examples to evidence a point, to find the word on the tip of their tongue, to prompt us into an epiphany. AI is often still at its best when carrying out micro-tasks for us, alongside us. . . .Much work and many skills, then, remain in our purview. We'll do better ourselves in the coming years by being more aware of what skills are still hard for AI while we nurture our own curiosity. Try picking one of the two dozen skills listed here and generate a learning pathway for yourself. Set dedicated time aside to follow that path and develop that skill. And all the while, consider when and how to utilize gen AI for sub-skills and sub-tasks, as help for the exploits of hands, head, and heart.