

25 human transformations we can expect in the next decade

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Rather than wither away in the face of AI, humanity is now positioned for an evolutionary leap through the inventions being pioneered today in human augmentation science. Though much of the attention on disruptive technology has highlighted the threats of AI, is all the angst necessary? Instead, is it possible that human beings, empowered by an array of other new disruptive technologies in the life sciences, could be put at an advantage in relation to AI?

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We are entering the age of artificial intelligence (AI); standing on the precipice of radical growth in human productivity enabled by bio-technological enhancements. It is increasingly conceivable, and scientifically possible, that humanity—rather than being overshadowed by the rise of AI—might be ready to surpass all previous real or imagined limitations of our brains and bodies.

In our new book, ‘The Future - Reinvented: Reimagining Life, Society, and Business’, we explore 25 human transformations that might make it onto the “must have” lists of the future.

Most of the emerging transformational technologies aimed at human enhancement fall under a few general categories, despite a good deal of crossover:

- *Chemical Enhancement:* Chemical enhancements would include pharmaceuticals which alter the brain, encompassing nootropics (for focus and memory) or psychedelics (for vision quests). Any transformation resulting from ingesting a food or drug would fall into this group.
- *Genetic Enhancement:* Targeting our DNA and genetics, this category of augmentations involves editing or altering the actual chromosomes and genomes before or after conception. The most commonly discussed technology for genetic enhancement today is CRISPR, a “cheap and easy” means of editing DNA in existing life forms, but genetic transformations touch also on cloning, designer babies, chimeras and aging/disease prevention.
- *Neurological Enhancement:* Enhancing the brain takes several forms ranging from hardware to software. Neural implants, electronic stimulation, and brain hacking would fall under this category—implants being actual foreign objects embedded in some way to affect the nervous system. Hacking could involve tapping into the brain via “mind over matter” or altered consciousness state to awaken previously dormant mental, physical, or even metaphysical abilities.
- *Physical Enhancement:* Physical transformations would usually appear as hardware add-ons like exoskeletons (i.e., an “Iron Man” suit), endoskeletons with reinforced bones, chip implantations, bionic eyes, or other prosthetics. These could be bionic, cyborg, 3D/4D printed, or otherwise innovative adaptations which can either be removed (like prosthetics, clothing, or armour) or permanent (surgically attached or implanted). Genetic manipulation to achieve extreme physical beauty or strength would be included in this category.

- *Electronic Enhancement*: The use of electronics involves the transformation of intelligence, consciousness, or humanity into digital form. Any type of uploading or downloading of human “content” in digital data form (hard drives or to the cloud) could be considered an electronic enhancement. There may also be types of implants or tattoos that read vital signs to communicate to the Internet of things, blockchains, or digital public health data sets. Health applications of nanotechnology could fall under this category along with wearable technology, and human transformations that deal with virtual reality (VR) or augmented reality (AR).
- *Radical Life Extension*: Extending life often refers to “curing death” as its raison d'être. Aging is viewed as an unnecessary evil, a mere medical problem waiting to be solved. Being able to live 125 years or more with comfort and good health seems to be the current vision for life extension proponents, who advocate for pharmaceutical, dietary, and lifestyle adaptations to achieve longer than natural life spans.
- *Cryogenic Freezing / Cryopreservation*: Rather than extend life, this transformative breakthrough puts life on pause, to restart later in time, decades or centuries from now. The idea behind cryogenic freezing is that in the future, medical technology will be able to reanimate a body which has been preserved in liquid nitrogen at very low temperatures. The elderly and the terminally ill are the most likely candidates for cryo, although there could be elective preservation conducted for personal reasons in the future. Of course, we have no idea whether we'll ever have the technology to re-awaken the physical body and restore memory and consciousness.

Below are twenty-five radical suggestions you might treat yourself, your friends, colleagues, and family members to in the coming decades:

1. Instant Content Upgrades

In the next 10-15 years we could be able to perform instant content updates to the human brain e.g. uploading a new language, a map, knowledge about a client or project, and key information prior to a romantic date or a business meeting. This would be achieved either through direct downloads to our web-connected brains or via plug-in memory devices for more confidential information.

2. Brain-Computer Interface

Wireless communication between our brains and an array of connected devices could become a reality. From computers and phones to domestic appliances and in-car entertainment systems – we would be able to operate gadgets with our thoughts. These wearable or implanted sensors and transmission devices would allow us to communicate as we do with Siri and Alexa today, but without saying a word.

3. Smart contact lenses

Who needs screens when you have eyes that can be turned into visual interfaces? Every device could easily connect with your smart contact lenses and present the information you desire such as augmented reality overlays of a city as you sightsee. Your requests would be communicated using eye movement, gestures, words, or telepathic commands.

4. Beyond the Rainbow

Gene therapy has cured colour blindness in monkeys; if clinical trials are allowed, colour blind humans may be next. Eventually, science may expand our colour vision to include all wavelengths of light, from gamma rays to ultraviolet to radio waves. Humans might literally see the world in a whole new light.

5. Beyond Sound

As humans age, we naturally lose the ability to hear higher frequencies. In the future, we may be able to reverse this, or even enhance human hearing beyond the normal range via aural implants directly connected to our brains.

6. Endoskeleton

Become stronger and fitter from the inside out, but without most of the requirement for exercise and healthy eating. Physical and genetic enhancements applied to your bones and muscles would improve your BMI and performance from the get-go. Reinforced bones would improve tone and strength with no extra work needed.

7. Implanted Immunity Bubble

Subcutaneous implants would detect pathogens in the immediate environment and provide antibodies to protect us from specific contagious diseases. This would make most public health measures irrelevant as coughing, sneezing, and touching may no longer pose a risk. Handwashing could become a redundant activity and vaccines unnecessary, while a global antibiotic crisis could also be averted.

8. Heightened Sensitivity

Through deep brain stimulation, humans may eventually have total control of how much physical sensations affect them. We could turn a dial to increase touch sensitivity during intimate moments, or while playing a car chase computer game, but dial down our sensitivity in anticipation of a physical altercation.

9. Reality Check Implant

This personal detection system would allow us to control our experience of mixed reality, VR, and AR sensory stimulation environments. The system would block out photoshopping, virtual, augmented, digital or holographic imagery, and other sensory inputs whenever the wearer wants to “keep it real.”

10. Wear Your Reputation on Your Sleeve

One’s online reputation may become a valuable form of currency in the future, and be considered in job-seeking or credit applications, for example. Tattoos or embedded objects could change, grow, morph, and otherwise shape-shift depending on one’s fluctuating online reputation score. A score might be comprised of the number of social media contacts, shares, likes, or uploads.

11. Cosmetic Gene Editing

The gene modification technology known as CRISPR introduced in 2012 has already made it “cheap and easy” to edit genomes inside the body. The CRISPR system's ease of use means it could be used for almost any gene-editing technique. While doctors could apply the technology as a targeted cancer treatment, we could also see the same approach used for cosmetic augmentation. For example, high street centres could provide services to change clients’ hair thickness, eye colour, and skin pigmentation, making CRISPR treatments as common as other beauty and lifestyle options.

12. Immersive Experiential Technologies

Augmented, multi-sensory, and immersive mixed or virtual reality could create opportunities for new types of life experience. For example, feeling the bed linen, tasting the food, and smelling the bathroom fragrances of a hotel on the other side of the world as part of choosing where to visit. Possibly consume a range of experiences direct from your living room, in place of travelling; immerse yourself on the sights, sounds, and smells of the Serengeti while you eat your takeaway pizza.

13. 3D Cloner: See and Print

This device would allow a product to be identified and 3D printed in real time and “on sight” with special optical lens implants which trigger the cloning of the item being viewed by the wearer, like taking a snapshot. Clothing, food, and even medical products like prosthetic arms or legs could be created instantaneously on the spot, “cloning” whatever item the user glances at, and transmitting them to be produced on 3D printing machines.

14. The God Pill

Advances in pharmaceuticals and neuroscience could lead to a breakthrough drug designed to experience a higher state of consciousness which some might call ‘God’. This might provide a feeling of one’s place in the universe, a sense of oneness with nature, or help you visualize yourself face to face with an actual deity. These hallucinogenic experiences would fall somewhere on a spectrum between recreational and therapeutic, depending on the recipient’s state of mind at the time. This could be perfect for coping with mid-life crises, dealing with the death of a loved one, anxiety disorders, accepting a terminal diagnosis, and recovering from addiction. Or, just try it for fun.

15. 3D Printed Wings

We could fly as close to the sun as we like with customized 3D printed wings, which are perfectly designed to bring aerodynamic freedom and flight. These powerful, lightweight appendages could be attached surgically and removed by a visiting robo-surgeon or with an in-home DIY kit and training video (sold separately).

16. Always a Good Hair Day

A gene-altering pill that could change a hairstyle within fifteen minutes from straight to curly would save time and energy since styling is eliminated from the daily routine, and there would be no need to visit the hair salon. Furthermore, toxic beauty products could be eliminated from women’s daily regimens with this enhancement. This would also be ideal for traveling to extremely humid or dry climates. This pill’s popularity could surge in regions where climate change is already having an effect.

17. VR Empathy Machine: Walk a Mile in My Shoes*

Conflict resolution would be simplified with VR empathy films which allow friends, family members, teachers, students, bosses, workers, and even litigators in court to literally see the world through each other’s eyes. Benefits would include greater interpersonal intimacy and understanding, elimination of sibling rivalries, and dealing swiftly with difficult people.

*Requires pre-installation of memory recording device.

18. Sleep with the Fishes

Using “mind over matter”, hacking the human body might someday allow people to breathe underwater. The brain would convince the body it has certain fish-like abilities - specifically, greater lung capacity. Humans could then live in futuristic underwater cities, engaging in a little live action role play as Aqua Man or a mermaid, or just enjoy swimming with the dolphins during island vacations without scuba gear. Such an enhancement could also enable humans to settle or just holiday on floating or underwater cities.

19. Cryopreservation Pal

Cryogenic freezing is a medical technology that preserves a human body in liquid nitrogen at very low temperatures, hopefully for later reanimation at some point in the future. A cryopreservation chamber which fits one human and one dog or large cat could make the deep sleep a bit less frightening. Wouldn’t it be nice to know your best friend will be there when you wake up in twenty or a hundred years’ time? Instant companionship might make the idea of being reanimated in the

far future a little less daunting for people who don't have spouses or family members being cryopreserved.

20. Perfect Body in a Pill

What if, at last, medical science achieves the ultimate win for sofa surfers, and creates a pill to give you the body of a god without putting in all the work or adopting any healthy habits? Ripped abs, ageless skin, perfect proportions—what more could someone want? For those who want more, a second daily pill could generate an intoxicating body odour.

21. Exoskeleton

Achieving superhuman strength and endurance might be possible with an exoskeleton suit of external body armour that turns any average person into Iron Man. Physical labour would be a breeze with the addition robotic arms, legs, and a back which never tire or run low on energy. Whilst this would be great for work or recreational sports, it puts house movers, construction workers, and weight lifters at risk of being “replaced by cyborgs.”

22. Elephant Man or Woman

Imagine never forgetting anything ever again. Elephants are believed to have the longest memory of any living creature. With the help of neural implants, now people can remember forever, too! These implants, possibly in the form of a “neural lace” lattice of tiny sensors under or just above the skull, could improve memory and may ultimately also prevent Alzheimer's disease. This would make a perfect gift for the radical age-extender in your life, or elderly relatives who've not yet started showing signs of dementia.

23. Digital Happy Pill

Dwellers of the world's high-tech smart cities could opt to take a pill that lets them have their lives monitored and managed remotely with 24/7 data capture and surveillance, day in and day out. Imagine each and every behaviour monitored, and, if necessary, modified, by the city's central nervous system based on a smart city artificial intelligence (AI) program. One of the ways to alleviate fears, paranoias or other mental delusions concerning “privacy” might be to take this daily “digital happy pill”, jointly monitored by city planners and medical professionals to ensure smart city residents are the happiest citizens on earth! Smile, you're on camera (constantly, even in your own home)!

24. 4D Printed Skin

4D printed materials are essentially “shape shifting” in the sense that they can change their form and properties based on external stimuli. So, wetness prompts drying or absorption, heat promotes cooling, and so forth. In the future, a skinsuit, active skin covering, or surgical skin implant could give humans the ability to adapt to their environment seamlessly. Clothing may become unnecessary with this form-fitting shape-shifting material, which could look like clothes, skin, or whatever the wearer selects. An essential adaptation in extreme climates, 4D printed skin is also ideal for the fashionista in your life.

25. Organ Regeneration

The ability to regenerate human organs could end the ravages of disease, aging, and even injury. By 2030, organ regeneration modification may be the signature transformation of life-extension adopters. Careful consideration should be taken with this (particularly with alcoholics and drug abusers), as it could actually enable irresponsible behaviour.

These may seem like something out of the pages of a Richard Morgan novel, but by 2030 they could be, not just reality, but commonplace.

ABOUT THE AUTHORS

Rohit Talwar, Steve Wells, Alexandra Whittington, Maria Romero, and April Koury are from Fast Future which publishes books from future thinkers around the world exploring how developments such as AI, robotics and disruptive thinking could impact individuals, society and business and create new trillion-dollar sectors. Two new books from Fast Future are: 'Beyond Genuine Stupidity - Ensuring AI Serves Humanity', and 'The Future - Reinvented: Reimagining Life, Society, and Business'. See: www.fastfuture.com

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