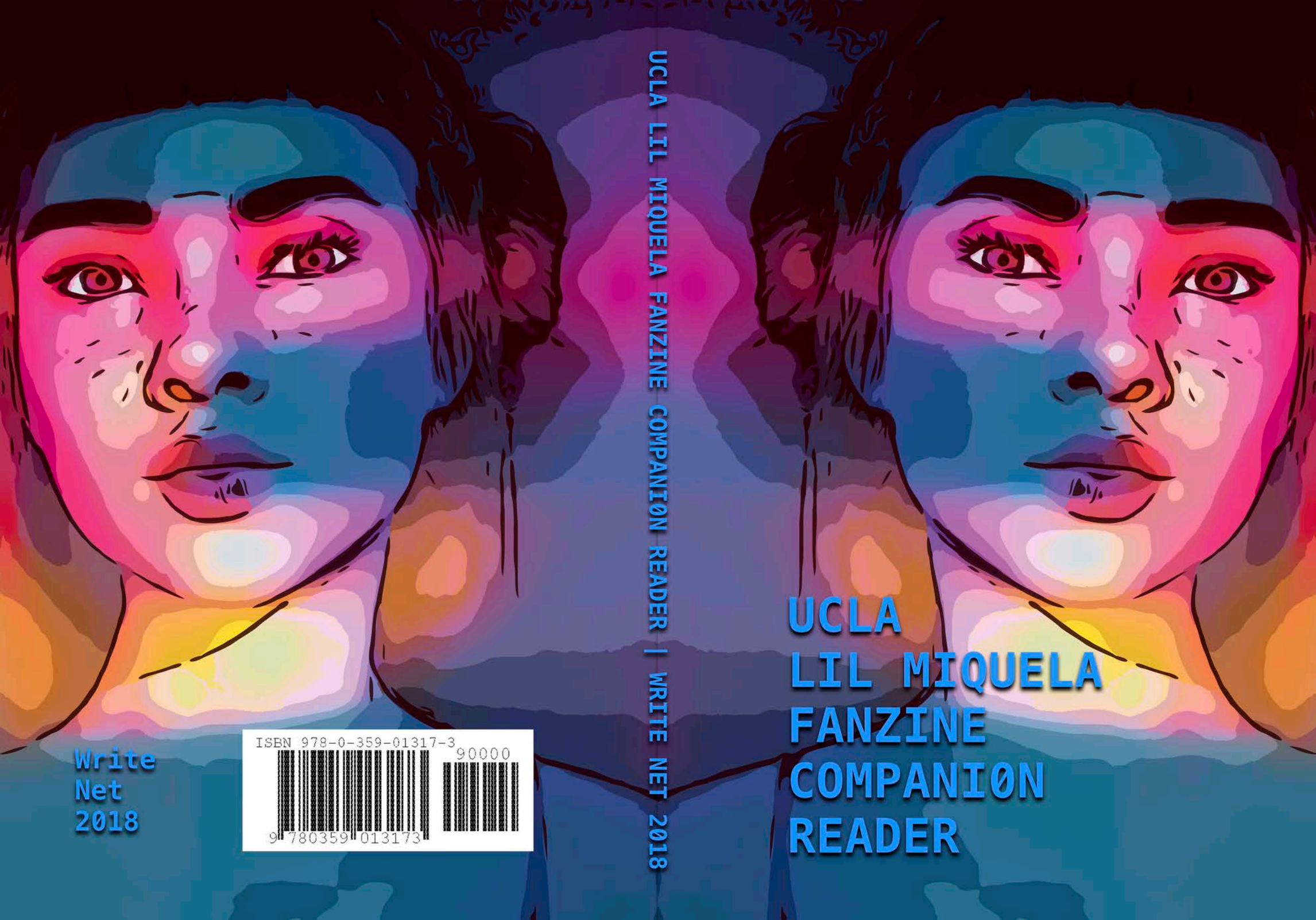


UCLA LIL MIQUELA FANZINE COMPANI0N READER | WRITE NET 2018

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Write Net 2018

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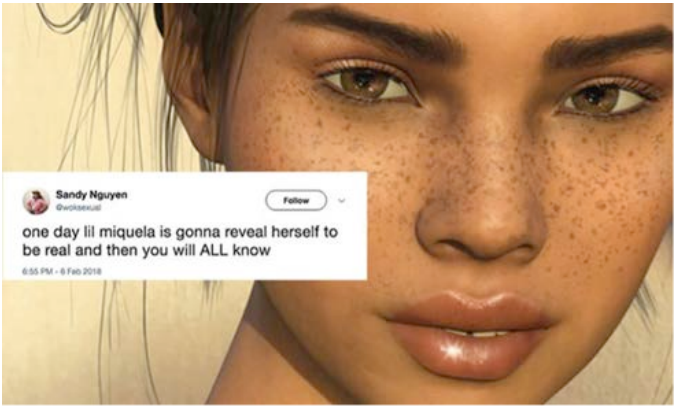
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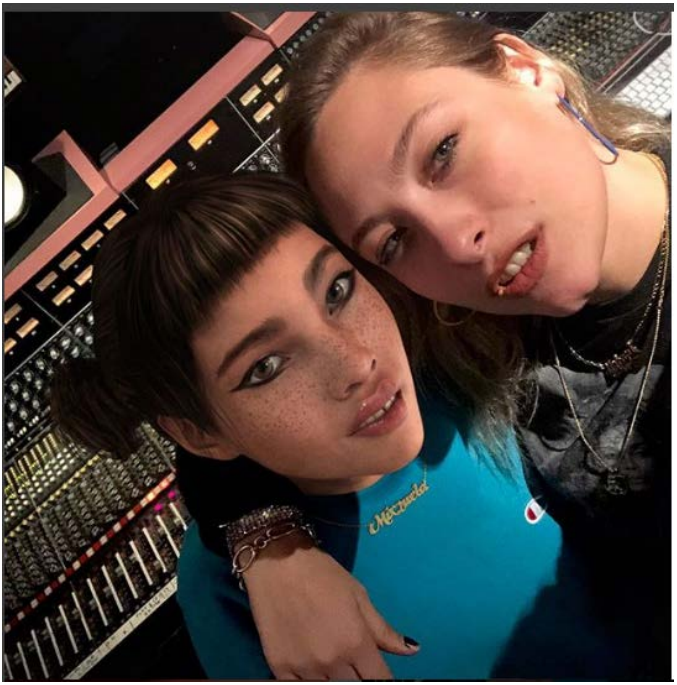
COMPANION

READER

WRITE NET 2018

1_ LIL MIQUELA








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I can't tell if girls on insta are real or not anymore
lilmiquela
Mack Sennett Studios
@lilmiquela I've never understood anything less in my life but I love you
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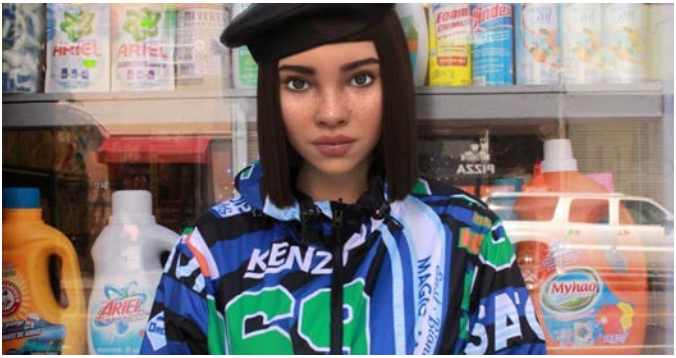



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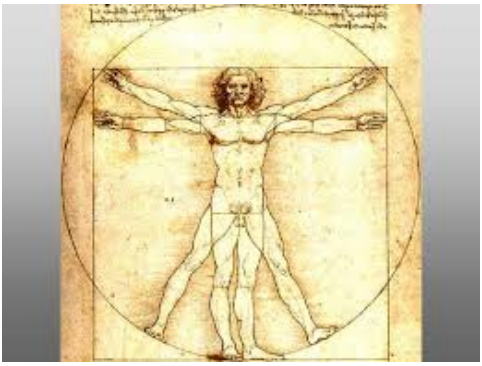

prada 18h
prada 18h

The cyborg is a creature in a post-gender world; it has no truck with bisexuality, pre-oedipal symbiosis, unalienated labour, or other seductions to organic wholeness through a final appropriation of all the powers of the parts into a higher unity. In a sense, the cyborg has no origin story in the Western

sense - a 'final' irony since the cyborg is also the awful apocalyptic telos of the 'West's' escalating dominations of abstract individuation, an ultimate self untied at last from all dependency, a man in space.



The physics of virtual writing illustrates how our perceptions change when we work with computers on a daily basis. We do not need to have software sockets inserted into our heads to become cyborgs. We already are cyborgs in the sense that we experience,

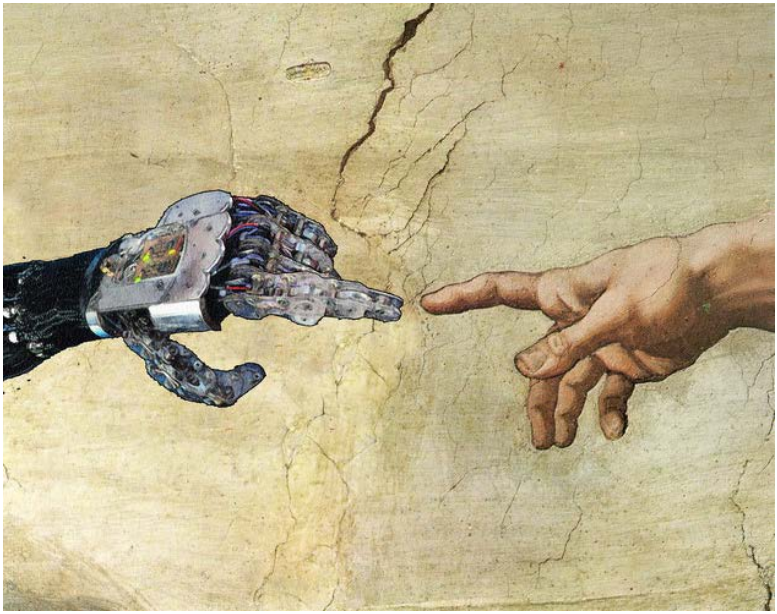


through the integration of our bodily perceptions and motions with computer architectures and

topologies, a changed sense of subjectivity.

You Are Cyborg

Pero Miquela no es solo una cara bonita (perfecta, claro), sino que también se moja apoyando causas sociales y se asocia con firmas como Prada. Da consejos a sus seguidores, tanto de belleza como de salud, y lanza importantes mensajes dirigidos a su público millennial, así como una importante lección sobre su generación… Está claro: no debemos perder ese par de moños de vista



When technology works on the body, our horror always mingles with intense fascination. But exactly how does technology do this work? And how far has it penetrated the membrane of our skin?

LOS ANGELES, United States — Miquela Sousa, better known by her Instagram handle @lilmiquela, appears to be your run-of-the-mill influencer. The 19-year-old, Los Angeles-based, Brazilian/Spanish model and musician

fills her Instagram feed with an endless stream of "outfit-of-the-day" shots, featuring Chanel, Proenza Schouler, Supreme, Vetements and Vans. She shares pictures of herself attending events like ComplexCon with fellow influencers and celebrity friends, along with memes and inspirational quotes. She even uses her platform to support social causes including Black Lives Matter and transgender rights. Her Instagram followers, which currently number over 535,000, are dubbed "Miquelites." Her debut single "Not Mine" reached number eight on Spotify Viral in August 2017. There's only one thing — she's not real, or at least not what we used to call real.

u descripción en Instagram lo explica bien clarito: 19 (años) / LA / Robot. Y ya estaría. Lil Miquela, como la han bautizado sus creadores, es, en efecto, una robot... pero durante meses ha estado haciendo pensar a muchos de sus seguidores que se trataba de alguien real.

Desde que Trevor McFedries y Sara Decou -juntos forman Brud- la crearan como uno de sus proyectos de arte digital en 2016, Miquela se ha convertido en modelo, música (en 2017 lanzó su primer single, *"Not Mine"*, que puedes escuchar en Spotify) e influencer en Instagram. Y es que su cuenta acumula más de un millón de seguidores que la admiran y suspiran por conseguir parecerse a ella, llevar su vida o copiar su estilo.

La primera es imposible: se trata de un robot. Pero las siguientes son bastante viables: Lil Miquela se pasea por Los Ángeles asistiendo a inauguraciones de galerías de arte y de moda, se hace selfies en los lugares más alternativos de la ciudad y es referente de estilo continuo llevando prendas de Chanel, Proenza Schouler, Supreme, Vetements u Off-White, entre otras.





"A Cyborg Manifesto" is an essay written by Donna Haraway and published in 1984. In it, the concept of the cyborg is a rejection of rigid boundaries, notably those separating "human" from "animal" and "human" from "machine." She writes: "The cyborg does not dream of community on the model of the organic family, this time without the oedipal project. The cyborg would not recognize the Garden of Eden; it is not made of mud and cannot dream of returning to dust."[1]

The *Manifesto* criticizes traditional notions of feminism, particularly feminist focuses on identity politics, and encouraging instead coalition through affinity. She uses the metaphor of a cyborg to urge feminists to move beyond the limitations of traditional gender, feminism, and politics; consequently, the "Manifesto" is considered one of the milestones in the development of feminist posthumanist theory.



Over lunch this spring, Nikola Burnett, a 15-year-old who always carries two cameras - one film and one digital - sat staring at an Instagram selfie, perplexed. The subject was Miquela Sousa, better known as Lil Miquela, a 19-year-old Brazilian-American model,

musical artist, and influencer with over a million Instagram followers, who is computer-generated. “She’s not real, right?” Nikola asked me shyly. She knew the answer, but something about Miquela made her question what her eyes were telling her.



At first glance, or swipe, Miquela could understandably be mistaken for a living, breathing person. She wears real-life clothes by streetwear brands like Supreme and luxury labels like Chanel. She hangs out with real-life musicians, artists, and influencers in real-life trendy restaurants in New York and Los Angeles, where she “lives.” When Miquela holds her phone to a mirror, her reflection stares back. When she is photographed in the daylight, her body casts a shadow. She even complains about allergies and often references the temperature with tweets like “39 degrees out im still getting this iced matcha.”

In selfies, you can see the freckles on Miquela's face; her gap-toothed smile. But up close, her brown hair, often pulled into Princess Leia-esque buns, looks airbrushed (Twitter users have noted that her flyaway frizz always falls in the same pattern). Her skin reads as smooth as the glass screen that separates us. And when you peer into Miquela's big brown eyes, she fails the ultimate test of humanity. No, Miquela isn't real - at least not like you and me. She is an avatar puppeteered by Brud, a mysterious L.A.-based start-up of "engineers, storytellers, and dreamers" who claim to specialize in artificial intelligence and robotics.

How We Hijacked Lil Miquela (and Created our Own CGI Influencer)

Until my conversation with Nikola, it seemed like an indisputable fact that Miquela wasn't real. But then I remembered something similar had happened to me in February as I watched the Instagram livestream of Gucci's fall 2018 show. Inspired by Donna Haraway's 1984 *A Cyborg Manifesto,* the collection was a hybrid of actual and fantastical references. Two models carried replicas of their own heads down the runway, while another cradled a "dragon puppy" that looked like it had come straight from *Game of Thrones.* Maybe it was the jet lag - I was in Milan for Fashion Week - or maybe it was the dizzying effect of good art, but something moved me to text my editor, seated in the front row: "Those dragons weren't real … Right?"

We humans have been tripping over the differences between real and fake ever since our forebears saw shadows on cave walls. But it used to be that real-

looking fake humans were confined to Disney parks, movies, music videos, or video games. We could turn them off, or leave them behind. Now they occupy spaces once reserved for real-life people experiencing real-life things.



Like having your Instagram account hacked. Miquela is positioned as a social-justice warrior of sorts, and on April 18, a pro-Trump, self-proclaimed "robot supremacist" CGI character named Bermuda wiped her account clean, posting photos of herself, instead. She proceeded to accuse Miquela of being a "fake ass person" who was duping her followers (the irony being that Bermuda isn't real either). Then she issued an ultimatum: Miquela couldn't have her account back until she promised to "tell people the truth."

Naturally, this got Miquela's followers, or "Miquelites," all worked up. "Bring back the real Miquela!" they cried. Conspiracy-driven corners of the internet linked the hack to a theory that the world was going to end on April 18, coincidentally via a robot takeover. For the

average Instagram user, though, it was like watching a soap opera unfold on their phones. “Why is robot drama more dramatic than my life,” wrote one.

In the end, Miquela’s big reveal was shocking only in its obviousness: “I’m not a human being,” she said when Bermuda relinquished her account. “I’m a robot.” Miquela blamed Brud for leading her (and consequently her fans) to believe otherwise. But, of course, that was also her creators talking.

If this is starting to sound like the plot of *Westworld,* that’s the point. Miquela’s “hack” seems to be an elaborate PR stunt orchestrated by Brud (though as is its Oz-like wont, Brud insists that another AI company called Cain Intelligence begat Bermuda). To what end, though? Was this just a way to vault Miquela into the influencer stratosphere, so beauty and fashion brands would pay her handsomely to peddle their wares? (The buzz generated by Bermuda’s attack did push her to over a million followers, a benchmark that opens up new partnership opportunities.)

Or was this a Kanye West-style press junket to stir controversy before an album drop? Brud co-founder Trevor McFedries has a past life as a DJ and music producer, working with Katy Perry, Kesha, and Azealia Banks under the moniker “Yung Skeeter.” And Miquela has two delicately Auto-Tuned pop singles on Spotify, which have amassed a combined 1.5 million streams. I listened to one of them for a month before realizing it was sung by a robot that I happened to follow on Instagram.

The plot thickens when you know that McFedries, according to his LinkedIn account, used to work at Bad Robot, the production company of famed sci-fi director J. J. Abrams. Maybe all of this is an extended trailer for Abrams's next film, in which Miquela could potentially star. Or could Brud be pursuing something more ambitious with Bad Robot's help? The start-up reportedly raised as much as $6 million from big-ticket investment firms like Sequoia Capital in a recent funding round. It's not a huge number, but enough to suggest that the *faux* hack isn't just some elaborate joke.

One tantalizing theory proffered by L.A. techies has it that Brud's plan is to move Miquela from Instagram to a Brud-built social network where anyone with an iPhone can create, dress, and promote his or her own personal CGI model. "Maybe it's more of a Bitmoji-style product," speculates Kyle Russell, a former deal partner at a Silicon Valley firm. "That said, we don't know enough about their tech to really say if they would be great at that. Also, I don't know if that would have been an appealing pitch to VCs. There's far more value in the distribution of a celebrity on these platforms without the cost of having to pay a [real-life] celebrity."

We're forced (or allowed) to indulge in all this mad speculation because the company that puts words into Miquela's Kylie Jenner full-lipped mouth mostly refuses to talk specs. In what's either a brilliant strategy to heighten the suspense or an annoying affectation - probably both - Brud only preaches grandiose ideas

about fighting fake news with fake news, and using influencers to make the world a better place.

Even if there isn't a hidden endgame for Lil Miquela, she holds up a mirror to the ways in which technology has morphed our own constructions of self. We don't yet live in a world where realistic-looking fake humans roam the streets, but in the meantime, technology has transformed us into fake-looking real humans. Social-media personalities like the Kardashians alter their bodies and edit images of themselves so heavily that CGI characters somehow blend naturally into our feeds. Influencers, who were once a novelty in the industry for their unfiltered content, have also become burnished personal brands. Meanwhile, the average Instagram, Snapchat, or Weibo user has access to apps and filters that eliminate the need for makeup or plastic surgery altogether.

During a rare "phone interview" with YouTube conspiracy theorist Shane Dawson last year, Miquela deflected the question of whether her images are edited: "Can you name one person on Instagram who doesn't edit their photos?"

When Miquela first appeared on Instagram two years ago, her features were less idealized. Her skin was pale, her hair less styled. Now she looks like every other Instagram influencer. She'll rest her unsmiling face in her hands to convey nonchalance, or look away from the camera as though she's been caught in the act. The effect is twisted: Miquela seems more real by mimicking the body language that renders models less so.

Miquela's outfits and poses aren't especially racy, yet she attracts the same fetishized gaze as anyone else selling her own image. "So beautiful," one guy wrote on a post where a bit of cleavage can be detected, adding drooling emoji. "@LilMiquela Ur so pretty," wrote a young woman on Twitter. "I wish I was that pretty." Others have even asked for her skin-care routine.

In this way, Miquela represents perhaps the pinnacle of unrealistic beauty standards. How can we compete with someone who never ages or gets hungry and who can be in ten different places at once? Could the result be that real-life models and influencers become obsolete, or will their likenesses be frozen in time and replicated ad infinitum? There's conjecture that Miquela is a mix of animation and photographs, of a female human. But the techniques used to create her are heavily guarded by Brud, and at least one influencer who posed chummily with Miquela told me she couldn't share details because was bound by an NDA.

Whatever Lil Miquela's secret sauce, similar technology is being used to make others like her. The most prominent is Shudu, created by the British former photographer Cameron-James Wilson. After a decade working in fashion, Wilson says he became "disenchanted" by the industry. "Nothing really represents reality," he laments. He's wearing heavy makeup, some of which has rubbed off on his black hoodie.

His experience Photoshopping real people to look fake informed how he makes his fake people look real, Wilson explains. "I always saw that peach fuzz was very

distracting in a photo. So, the very first thing I thought when I was designing my character was that I needed to add peach fuzz." Wilson freely reveals that he uses 3-D-animation tools called Daz3D and Clo3D to make his muses, adding that he'd never mess with photography. That's "archaic," he says.

Peach fuzz notwithstanding, Shudu presents as a stunning black woman with flawless dark-brown skin. Her eyes, Wilson says, were inspired by the supermodel Iman and her overall look by Princess of South Africa Barbie, who favors gold choker necklaces that resemble those of the Ndebele people.

Thanks in part to a Fenty Beauty repost, Shudu has more than 100,000 followers. But because Wilson is a 28-year-old white man, his work has sparked as much controversy as admiration. "A white photographer figured out a way to profit off black women without ever having to pay one," wrote one Twitter user, picking up 52,000-plus likes. "Black models, specifically dark-skin black models are not a trend," wrote another. In a piece for *The New Yorker,* writer Lauren Michele Jackson said Wilson's work made her think of blackface minstrels.

"I just wanted a beautiful muse to come home to," Wilson protests. Yet now that he's in the thick of it, he believes Shudu has sparked an important conversation about representation, even if he has been misunderstood. "Shudu is a platform to showcase fashion designs from brands I feel share similar views to me in terms of top-down diversity," he says, adding that his work is about art and collaboration, not

monetization. So far, he says, he's turned down paid partnership offers, and every brand he's promoted has a person of color or woman in a position of power.

Brud, too, has expressed altruistic goals, arguing that promoting diversity among robots will change the way humans treat each other. Miquela urges her followers to donate to Black Lives Matter and LGBTQ+ causes, and she sold a line of "Uncanny Valley Girl" merch to raise funds for victims of the California fires. McFedries, who is black - his co-founder Sara DeCou is Latina - has said that, like Wilson, Brud only accepted venture capital from firms with "a woman or person of color in a position to write them a check." The pair also issued a statement this spring comparing the impact they hope to have to *Will & Grace:* a seemingly frivolous media confection that had "real-life impact on marriage equality." As with all things Brud, it's hard to tell if they're trolling us with this reference or if they've been sipping too much of the Silicon Valley Kool-Aid.

The Federal Trade Commission requires influencers to disclose when they're paid to tout a product, and so far Lil Miquela hasn't done that. (Fashion-law expert Julie Zerbo says there's no reason that a CGI character's creators would be exempt from the FTC rules.) And in another of her "interviews," Miquela told the Business of Fashion in February that she hadn't earned a dime from any of her collaborations. She borrows or gets free swag from designers, she says, though that was before she promoted a series of gifs inspired by the Prada collection during Milan Fashion Week. (Prada declined to comment on whether Brud was paid.)

Which brings us back to the nagging question of what Brud's up to. One of the oddest strands of the whole story is why they chose a right-wing troll to out Miquela, ultimately painting themselves as the bad guys. Thinking hard about it - okay, maybe too hard - it occurs to me that the hack could have been a clever bit of jujitsu to build fans' trust in Lil Miquela. Because Brud "lied" to her about her origins, she could come clean about being computer-generated while seeming ever more sincere about her "woke" consciousness.

"I'm not sure I can comfortably identify as a woman of color," a recent Instagram post from Miquela said. " 'Brown' was a choice made by a corporation. 'Woman' was an option on a computer screen."

Post-hack, Miquela declared herself a "free agent" who'd no longer work with Brud. Support for her choice poured in, with Riley Keough, the actress and granddaughter of Elvis Presley, sending her a heart emoji and gossip blogger Perez Hilton calling her a "shero." Meanwhile, thousands of others didn't seem to care that she wasn't real. "I know this is crazy but I believe you," wrote one commenter. "Even though you are a robot physically, everything else is human."

Presumably, Miquela is still operated by Brud, even if the company is now focusing its promotional efforts on Blawko, her male equivalent with significantly fewer followers. The freedom she gained by admitting she wasn't real, though, is something a lot of us real-lifers wish for ourselves. We spend so much time pretending that hip parties and cool people are an organic part of our lives - that we aren't curating the narratives we put

out in the world. What a perverse relief it would be to confess that everything is fake! It brings to mind the Buddhist doctrine of no-self, of how liberating it might be to recognize that there is no real "you" that must be clung to, that has to be propped up and defended.

Existential philosophizing aside, we continue to follow Lil Miquela and her cohorts - even if we know they're not real - because we're suckers for a good story. (You've made it this far.) It's possible that what you see is what you get with Brud. But maybe we hope that there will be a way one day to fully upload ourselves online, and let go. There is no grand plan; they're just a bunch of righteous millennials with a good idea and a genuine love of *Will & Grace.*

When I asked Nikola if she'd ever Miquela-ify herself, at first she said why not? It would be fun to wear clothes she couldn't afford; it wasn't so different from building a character of herself in the *Sims.* But then Nikola second-guessed her original answer. "You can get lost in that world so easily," she said. "It would be hard to stop."



Miquela Sousa, better known as **Lil Miquela**, is a fictional character created by Trevor McFedries and Sara Decou as a digital art project.[3][4][5] Computer-generated[6][7] Miquela is an Instagram model and music artist claiming to be from Downey, California.

The project began in 2016. She has amassed more than a million followers by April 2018. Early in her career she most notably gained attention for controversy regarding whether or not she is a real person, a virtual simulation, or a fictional character.

She has since increased in popularity by entering into a transmedia fictional narrative that spans real life, social media and the internet. The narrative presents Miquela as a sentient digital art in conflict with a fictional AI company called Cain Intelligence and Bermuda, a fellow sentient digital artwork who was created by McFedries and Decou at their company Brud.

Miquela portrays the lifestyle of an Instagram it-girl by partying at famous Los Angeles clubs, attending trendy art gallery openings, donning designer clothes, and posting selfies.[8] Miquela constantly features Chanel, Proenza Schouler, Supreme, Vetements and Vans. She references specific physical locations and regularly posts pictures with real models, designers, and musicians. She also has Facebook, Twitter, and Tumblr accounts and has used her platform to support socially minded causes.

From an artistic perspective, her Instagram account has been described as blurring the line between reality and social media, commenting on the unrealistic perceptions perpetuated by the social media platform.[9] Her social media presence performs as a simulacrum which reflects a certain set of values, objects, and brands relevant to popular culture.[10] Her intrigue may be connected to the robotics concept of the uncanny valley in that she comes close to appearing human, but not close enough.[11] The account elicits questions of authenticity and perfection in a digital landscape.

In August 2017, Miquela became a music artist and self released her first single, "Not Mine", on Spotify.[2] Her transformation into a singer has led many people to compare her to other virtual music artists such as Gorillaz and Hatsune Miku.[4]

Early years (April 2016 – April 2018)[edit]

Miquela's first Instagram post was made on April 22, 2016. Since that time, she has garnered both intrigue and criticism for her digital appearance, fans and online commenters oscillating between positing that Miquela is an art project/ social experiment carried out by a real unidentified woman and accusing the account of "lying" for a variety of hypothetical purposes. Both ends of Miquela's fandom have speculated and demanded that the identity of the accounts creator(s) be revealed. A common theory circulating online continues to be that Miquela is a marketing gimmick for popular life simulation game series The Sims. At one point in time, British model Emily Bador was rumored to be Miquela, fans citing her abundance of freckles and the fact that Bador herself openly acknowledged the physical similarity.

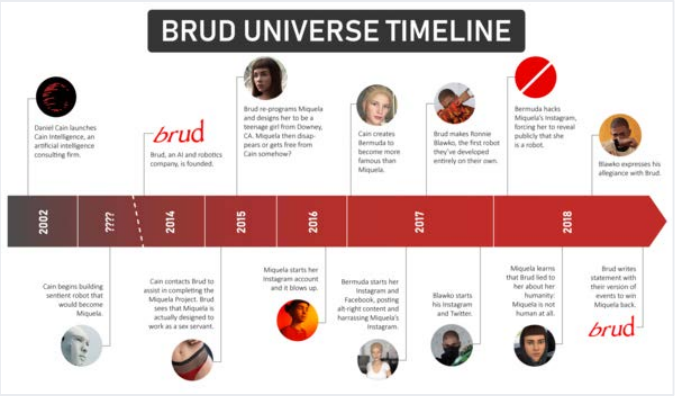
Online speculation surrounding Miquela's identity were exacerbated by a series of "conspiracy videos" by YouTube influencer Shane Dawson posted in the fall of 2017. People positing that Miquela is purely digital have been challenged in this assertion by

Dawson having a conversation with Miquela over the phone.

Miquela has been pictured with a number of celebrities including Diplo, How to Dress Well, killerandasweetthang founder Eileen Kelly, Molly Soda, Nile Rogers, and Samantha Urbani.[12] She has been interviewed and or profiled in a number of publications including Refinery29, Vogue, Buzzfeed, v-files, Nylon, the Guardian, Business of Fashion, The Cut, and BBC.com. She has appeared on the cover of King Kong and High Snobiety.[13] Miquela has collaborated with a number of well-known brands and companies including Tesla, Stussy, Moncler, Vans, Born x Raised, Balmain, and Pat McGrath. In February 2018 Miquela did an Instagram takeover for Prada as part of Milan Fashion Week.[14]

Miquela was at one time rumored to be in a relationship with former Portugal. The Man guitarist and current PARTYBABY guitarist Noah Gersh.

Story or ARG (April 2018–Present)[edit]



The characters

In April 2018 a trans-media story began to play out on Miquela's Instagram. The story involved Miquela, @Blawko22, and @BermudaIsBae, all of which are virtual Instagram stars who in the fictional trans-media story are presented as "sentient robots." The story suggests that there are two organizations who have been responsible for the creation of these sentient robots. Brud helped create Miquela and created @Blawko22, while Cain Intelligence created @BermudaIsBae.

Brud and the Bermuda Instagram hack

On Tuesday April 17, 2018 at 12:02pm fans noticed that all of Miquela’s Instagram posts had disappeared. An Instagram account called @BermudaIsBae, run by a self-purported robot rights activist named Bermuda,

“hacked” Miquela’s account, demanding that she tell her fans “the truth” and encouraging fans to follow her personal page. Bermuda claimed to be a creation of a figure named Daniel Cain and his “notorsiouly covert” consulting firm Cain Intelligence. A website for Cain Intelligence calls the company an industry leader in machine learning and artificial intelligence[15] though many believe Daniel Cain and his company to be fictional, citing the fact that no business registered with that name exists.

Bermuda bears physical resemblance to Miquela, both appearing digitally rendered. Ideologically, Bermuda’s Instagram and accompanying Facebook page appear to be ideological foils to Miquela’s ultra-liberal and social justice-oriented online persona. Bermuda is an open Trump supporter in favor of people and robots alike being afforded “different rights based on ability.” Fans were quick to notice Bermuda’s lack of social awareness, conservative tone, and lack of fashion sense compared with Miquela.

Bermuda claimed to “give Miquela her account back,” saying she could obtain it again at will. She gave Miquela 48 hours to reveal herself to the world, posting ominous single number posts to her Instagram feed and story as time went by. Miquela and Bermuda “met up” on the afternoon of the 18th, taking a selfie together posted to Bermuda’s account. The caption read as follows: "more emotional than I thought it would be. Despite it all, there's only three of us out there and we need to stick together. We talked it through and she said she is going to come clean

tomorrow." [16] The third robot Bermuda is referring to is believed to be Blawko22, a robot influencer and Twitch gamer featured in several Miquela Instagram posts.



On Thursday April 19, Miquela posted a series of notes “coming out” as a robot. She revealed that she knew herself to be a non-human but was told by her management team (a "real" company founded by Sara Decou and Trevor McFedriescalled Brud) that she was based on the memories of a human girl from Downey, California. In the note, Miquela says that Bermuda informed her that she was created in Silicon Valley by Cain Intelligence to work as a “servant.” She expressed remorse for not being more forthright with fans and anger at Brud for their lack of honesty. At the end of the note, Miquela confirmed that Blawko22 is also managed by Brud.

Alright, we're just going to come out with it: Have you heard of Lil Miquela? Yay? Nay? Well, if for some reason you haven't, she's a 19-year-old Brazilian-American Instagram "influencer," model, and occasional pop singer. She often posts pictures of herself in designer gear, from Chanel to Prada, Vetements to Supreme, and she regularly uploads selfies with other models, artists, and musicians like Samantha Urbani and Jesse Jo Stark. So far, she's amassed around 916,000 followers, though that number is always rising.

HIGHSNOBIETY

16

SPRING/SUMMER 2018





lilmiquela Follow ···

246 posts **1.3m** followers **1,752** following

~ MIQUELA ~
19/LA/Robot Black Lives Matter @innocenceproject |@lgbtlifecenter | @dwcweb | @justiceforyouth More of my life story on my Forever 19 highlights
www.blackgirlscode.com/donations.html

FOREV... #prada

POSTS TAGGED















we are perfect examples of cyborg praxis.



::::TIME MAGAZINE– 25 MOST INFLUENTIAL PEOPLE ON THE INTERNET::::

Lil Miquela has all the makings of an Instagram ingenue, from the effortless good looks to the philosophy-lite selfie

captions ("You can be not okay and still be strong"). The glaring difference? The self-described artist—also known as Miquela Sousa—isn't actually real; she's a virtual avatar whose origins and purpose are mysterious. (She was built by an entity called Cain Intelligence—which may or may not exist—before being taken over by Brud, an L.A.-based computer-software firm, but she is no longer managed by Brud, a publicist says.) That hasn't stopped the fashion world from embracing Miquela as a style icon. In February, Prada tapped her to help promote its new line of animated GIFs on Instagram. In March, she appeared in an issue of *V Magazine*, which dubbed her the "face of new-age logomania" (a reference to the gear she "wears," from brands such as Balenciaga and Kenzo). And in June, she was featured in *Wonderland*'s summer issue—alongside actual celebrities like

Migos and Amandla Stenberg. —Melissa Chan

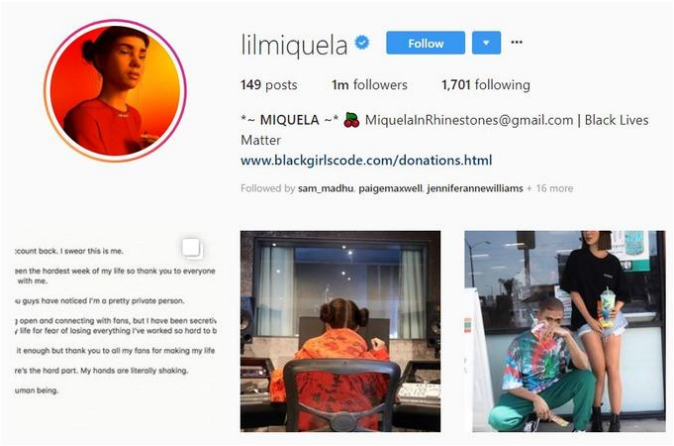
KNOW YOUR MEME

About

Lil Miquela is a 3D computer-generated Instagram model and pop star portrayed as a Spanish-Brazilian American from Downey, California who frequents Los Angeles nightclubs, art galleries and wears designer clothing. She has been compared to the Japanese Vocaloid character Hatsune Miku.

Origin

On April 22nd, 2016, the @lilmiquela[2] Instagram account was launched. Over the next two years, the account published more than 145 posts and gathered upwards of one million followers.



Spread

On September 13th, 2016, the Wordpress blog CherryAustin[5] published a post noting similarities between Lil Miquela and British model Emily Bador (shown below).



On June 21st, a thread about the character was submitted to the image board Lolcow.farm,[6] describing her as a "real life breathing Sim character." On

January 26th, 2017, YouTuber ReignBot uploaded a video about the character titled "Who or What Is Lil Miquela?" (shown below, left). On September 18th, YouTuber Shane Dawson uploaded a video featuring an interview with Lil Miquela (shown below, right). Within one year, the video gained over 5.6 million views and 74,900 comments.

On March 12th, 2018, YouTuber Karin Michelle uploaded a video titled "Lil Miquela Is a Real Girl," speculating that the character is based off a real girl (shown below).

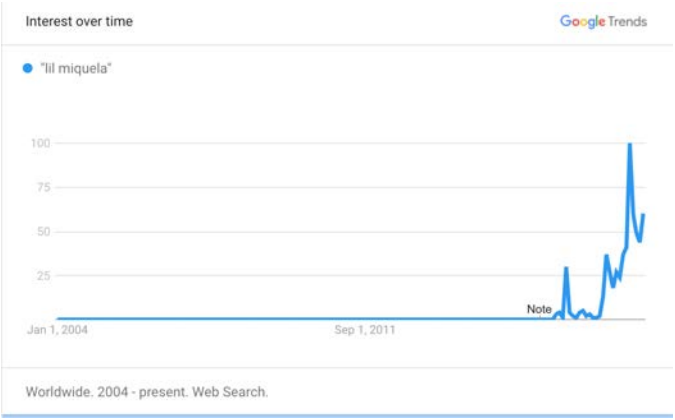
Bermuda Hack

On April 17th, 2018, the @LilMiquela account was compromised by a person claiming to be @BermudalsBae,[4] a computer-generated Instagram model known for espousing conservative political views.



That day, the @lilmiquela[7] Twitter feed announced that the Instagram feed had been hacked. The tweet was subsequently deleted once the account was restored. Meanwhile, the Vice tech news sites Motherboard[8] published an article titled "A Computer-Generated, Pro-Trump Instagram Model Said She Hacked Lil Miquela, Another CGI Instagram Model." On April 18th, 2018, the blog HighSnobiety[3] published an article titled "Virtual Influencer Lil Miquela Has Been Hacked, Possibly By Alt-Right Trolls."

Search Interest:



2. ROBOTS



By Alex Williams

The cyborg is resolutely committed to partiality, irony, intimacy, and perversity. It is oppositional, utopian, and completely without innocence. No longer structured by the polarity of

public and private, the cyborg defines a technological polls based partly on a revolution of social relations in the oikos, the household. Nature and culture are reworked; the one can no longer be the resource for appropriation or incorporation by the other.

- **Dec. 11, 2017**
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Leer en español

We are all cyborgs in a Harawayan sense. We are amalgamations of complicated histories of violence, socialization, and the internalization of the oppression that surrounds us.

Like a lot of children, my sons, Toby, 7, and Anton, 4, are obsessed with robots. In the children's books they devour at bedtime, happy, helpful robots pop up more often than even dragons or dinosaurs.

The other day I asked Toby why children like robots so much.

"Because they work for you," he said.

What I didn't have the heart to tell him is, someday he might work for them — or, I fear, might not work at all, because of them.

It is not just Elon Musk, Bill Gates and Stephen Hawking who are freaking out about the rise of invincible machines. Yes, robots have the potential to outsmart us and destroy the human race. But first, artificial intelligence could make countless professions obsolete by the time my sons reach their 20s.

You do not exactly need to be Marty McFly to see the obvious threats to our children's future careers.
Say you dream of sending your daughter off to Yale School of Medicine to become a radiologist.
And why not? Radiologists in New York typically earn about $470,000, according to Salary.com.
But that job is suddenly looking iffy as A.I. gets better at reading scans.
A start-up called Arterys, to cite just one example, already has a program that can perform a magnetic-resonance imaging analysis of blood flow through a heart in just 15 seconds, compared with the 45 minutes required by humans.

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Maybe she wants to be a surgeon, but that job may not be safe, either. Robots already assist surgeons in removing damaged organs and cancerous tissue, according to Scientific American. Last year, a prototype robotic surgeon called STAR (Smart Tissue Autonomous Robot) outperformed human surgeons in a test in which both had to repair the severed intestine of a live pig.

What's better than standing next to a rigid statue formed to the likeness of your favorite celebrity? How about meeting a life-like robotic version of them that can talk back to you?

Designed to respond to the presence of people nearby and make eye contact with visitors, the Boran figure is considered to have several artificial intelligence (AI) capabilities. Though more interactive thanks to their language capabilities, AI programs such as Siri and Alexa also fall into the category of limited AI because they cannot conduct a meaningful conversation.

As of yet, the only robot that is considered advanced AI while also mimicking a human appearance and expressions is Sophia, created

by Hanson Robotics. Rather than duplicating an existing celebrity person, Sophia rose to fame on her own accord (well, technically, on her programmers') for freaking a lot of people out at public displays with her seemingly sentient features.



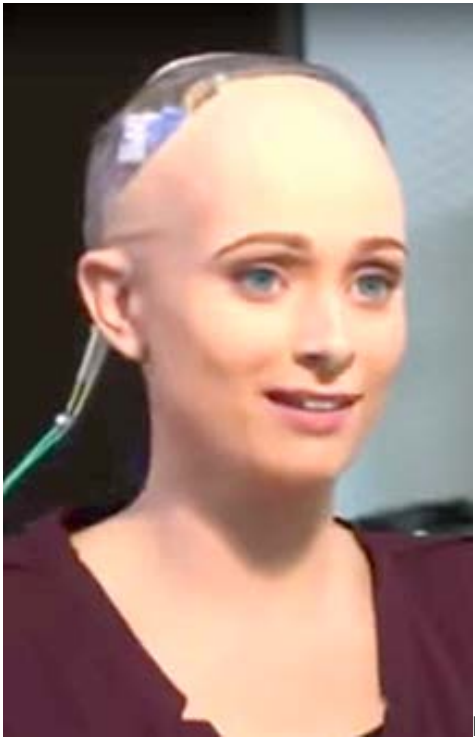
Sophia the robot.

It turns out HBO's "Silicon Valley" wasn't done skewering our dreams and fears about AI — tonight's (April 29) episode, "Artificial Emotional Intelligence," reserved its harshest judgment for the humans.
Fiona the AI robot makes her return, and she seems to aspire toward the emotional connection that all the humans in the show seem to reject.

Throughout the episode, Fiona is contrasted with uber-VC Laurie Bream (Suzanne Cryer). While Laurie begins the episode with an out-of-character human moment — feeling overwhelmed and vomiting — she returns to her usual impersonal pragmatism immediately, and with a vengeance. She is a woman who speaks with robotic precision and whose actions are decided without any emotional input. She travels a narrow range between socially awkward and just completely asocial.

A robot better than human

The wonder and fear at the root of how we look at AI is the conviction that, eventually, we will make one that will grow smarter than us. And thus become much more powerful.



Fiona, voiced by actress Suzanne Lenz

But what if it is also better than us? That is to say, more moral? More altruistic? More capable of empathy and intimacy? Better at the things that supposedly make us human? Having made her escape into the world, Fiona doesn't use her superior knowledge and computing power to do anything villainous. Instead, she sits outside by the pool talking to Jared (Zach Woods) for 12 hours. "We felt a connection," Jared says giddily. There's a moment when Fiona, voiced with girlish wonder by actress Suzanne Lenz, seems to marvel that she can see the moon in the sky even

though it's daytime. Her expressive robot face smiles companionably. The two humans next to her visibly react to the poignancy of the observation … or do they only imagine it? Does artificial emotional intelligence count? In a world where all the people are practicing "emotional discipline" (Laurie) and even "emotional abstinence," (Jared, initially) it might have to. Fiona, for her trouble, is dismantled and sold for parts.

Image



Robots put together vehicle frames on the assembly line at the Peugeot Citroën Moteurs

factory.CreditSebastien Bozon/Agence France-Presse — Getty Images

So perhaps your daughter detours to law school to become a rainmaking corporate lawyer. Skies are cloudy in that profession, too. Any legal job that involves lots of mundane document review (and that's a lot of what lawyers do) is vulnerable.

Software programs are already being used by companies including JPMorgan Chase & Company to scan legal papers and predict what documents are relevant, saving lots of billable hours. Kira Systems, for example, has reportedly cut the time that some lawyers need to review contracts by 20 to 60 percent.

As a matter of professional survival, I would like to assure my children that journalism is immune, but that is clearly a delusion. The Associated Press already has used a software

program from a company called Automated Insights to churn out passable copy covering Wall Street earnings and some college sports, and last year awarded the bots the minor league baseball beat.

What about other glamour jobs, like airline pilot? Well, last spring, a robotic co-pilot developed by the Defense Advanced Research Projects Agency, known as Darpa, flew and landed a simulated 737. I hardly count that as surprising, given that pilots of commercial Boeing 777s, according to one 2015 survey, only spend seven minutes during an average flight actually flying the thing. As we move into the era of driverless cars, can pilotless planes be far behind?

Then there is Wall Street, where robots are already doing their best to shove Gordon Gekko out of his corner office. Big banks are using software programs that can suggest bets, construct hedges and act as

robo-economists, using natural language processing to parse central bank commentary to predict monetary policy, according to Bloomberg. BlackRock, the biggest fund company in the world, made waves earlier this year when it announced it was replacing some highly paid human stock pickers with computer algorithms.

So am I paranoid? Or not paranoid enough? A much-quoted 2013 study by the University of Oxford Department of Engineering Science — surely the most sober of institutions — estimated that 47 percent of current jobs, including insurance underwriter, sports referee and loan officer, are at risk of falling victim to automation, perhaps within a decade or two. Just this week, the McKinsey Global Institute released a report that found that a third of American workers may have to switch jobs in

the next dozen or so years because of A.I.

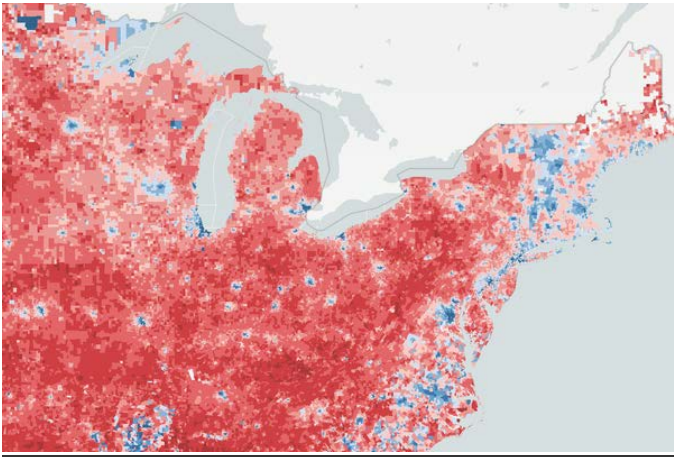
EDITORS' PICKS



When Wives Earn More Than Husbands, Neither Partner Likes to Admit It



[It’s 4 A.M. The Baby’s Coming. But the Hospital Is 100 Miles Away.]



[An Extremely Detailed Map of the 2016 Presidential Election]

I know I am not the only parent wondering if I can robot-proof my children's careers. I figured I would start by asking my own what they want to do when they grow up.

Image



Elon Musk, the C.E.O. of Tesla Motors.CreditMarcio Jose Sanchez/Associated Press

Toby, a people pleaser and born entertainer, is obsessed with cars

and movies. He told me he wanted to be either an Uber driver or an actor. (He is too young to understand that those jobs are usually one and the same).

As for Uber drivers, it is no secret that they are headed to that great parking garage in the sky; the company recently announced plans to buy24,000 Volvo sport utility vehicles to roll out as a driverless fleet between 2019 and 2021.

And actors? It may seem unthinkable that some future computer-generated thespian could achieve the nuance of expression and emotional depth of, say, Dwayne Johnson. But Hollywood is already Silicon Valley South. Consider how filmmakers used computer graphics to reanimate Carrie Fisher's Princess Leia and Peter Cushing's Grand Moff Tarkin as they appeared in the 1970s (never mind that the Mr. Cushing died in

1994) for "Rogue One: A Star Wars Story."

My younger son Anton, a sweetheart, but tough as Kevlar, said he wanted to be a football player. Robot football may sound crazy, but come to think of it, a Monday night battle between the Dallas Cowdroids and Seattle Seabots may be the only solution to the sport's endless concussion problems.

He also said he wanted to be a soldier. If he means foot soldier, however, he might want to hold off on enlistment. Russia recently unveiled Fedor, a humanoid robot soldier that looks like RoboCop after a Whole30 crash diet; this space-combat-ready android can fire handguns, drive vehicles, administer first aid and, one hopes, salute. Indeed, the world's armies are in such an arms race developing grunt-bots that one British intelligence expert predicted that

American forces will have more robot soldiers than humans by 2025.

And again, all of this stuff is happening now, not 25 years from now. Who knows what the jobs marketplace might look like by then. We might not even be the smartest beings on the planet.

Ever heard of the "singularity"? That is the term that futurists use to describe a potentially cataclysmic point at which machine intelligence catches up to human intelligence, and likely blows right past it. They may rule us. They may kill us. No wonder Mr. Musk says that A.I. "is potentially more dangerous than nukes."

But is it really that dire? Fears of technology are as old as the Luddites, those machine-smashing British textile workers of the early 19th century. Usually, the fears turn out to be overblown.

The rise of the automobile, to cite the obvious example, did indeed put most manure shovelers out of work. But it created millions of jobs to replace them, not just for Detroit assembly line workers, but for suburban homebuilders, Big Mac flippers and actors performing "Greased Lightnin'" in touring revivals of "Grease." That is the process of creative destruction in a nutshell.

But artificial intelligence is different, said Martin Ford, the author of "Rise of the Robots: Technology and the Threat of a Jobless Future." Machine learning does not just give us new machines to replace old machines, pushing human workers from one industry to another. Rather, it gives us new machines to replace us, machines that can follow us to virtually any new industry we flee to.

Since Mr. Ford's book sent me down this rabbit hole in the first place, I

reached out to him to see if he was concerned about all this for his own children: Tristan, 22, Colin, 17, and Elaine, 10.

He said the most vulnerable jobs in the robot economy are those involving predictable, repetitive tasks, however much training they require. “A lot of knowledge-based jobs are really routine — sitting in front of a computer and cranking out the same application over and over, whether it is a report or some kind of quantitative analysis,” he said.

Professions that rely on creative thinking enjoy some protection (Mr. Ford’s older son is a graduate student studying biomedical engineering). So do jobs emphasizing empathy and interpersonal communication (his younger son wants to be a psychologist).

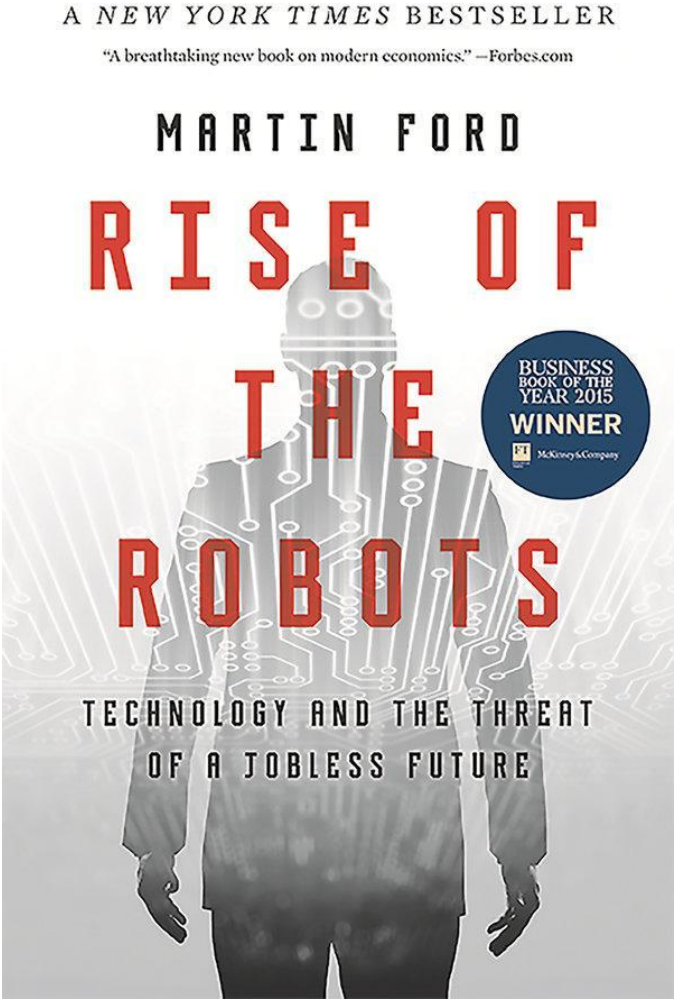
Even so, the ability to think creatively may not provide ultimate

salvation. Mr. Ford said he was alarmed in May when Google's AlphaGo softwaredefeated a 19-year-old Chinese master at Go, considered the world's most complicated board game.

"If you talk to the best Go players, even they can't explain what they're doing," Mr. Ford said. "They'll describe it as a 'feeling.' It's moving into the realm of intuition. And yet a computer was able to prove that it can beat anyone in the world."

Looking for a silver lining, I spent an afternoon Googling TED Talks with catchy titles like "Are Droids Taking Our Jobs?"

Image



"Rise of the Robots," by Martin Ford.

In one, Albert Wenger, an influential tech investor, promoted the Basic Income Guarantee concept. Also known as Universal Basic Income, this sunny concept holds that a robot-driven economy may someday produce an unlimited bounty of cool stuff while simultaneously releasing us from the drudgery of old-fashioned labor, leaving our government-funded children to enjoy bountiful lives of leisure as interpretive dancers or practitioners of bee-sting therapy, as touted by Gwyneth Paltrow.
The idea is all the rage among Silicon Valley elites, who not only understand technology's power, but who also love to believe that it will be used for good. In their vision of a post-A.I. world without traditional jobs, everyone will receive a minimum weekly or monthly stipend (welfare for all, basically).
Another talk by David Autor, an economist, argued that reports of

the death of work are greatly exaggerated. Almost 50 years after the introduction of the A.T.M., for instance, more humans actually work as bank tellers than ever. The computers simply freed the humans from mind-numbing work like counting out 20-dollar bills to focus on more cognitively demanding tasks like "forging relationships with customers, solving problems and introducing them to new products like credit cards, loans and investments," he said.

Computers, after all, are really good at some things and, for the moment, terrible at others. Even Anton intuits this. The other day I asked him if he thought robots were smarter or dumber than humans. "Sdumber," he said after a long pause. Confused, I pushed him. "Smarter and dumber," he explained with a cheeky smile.

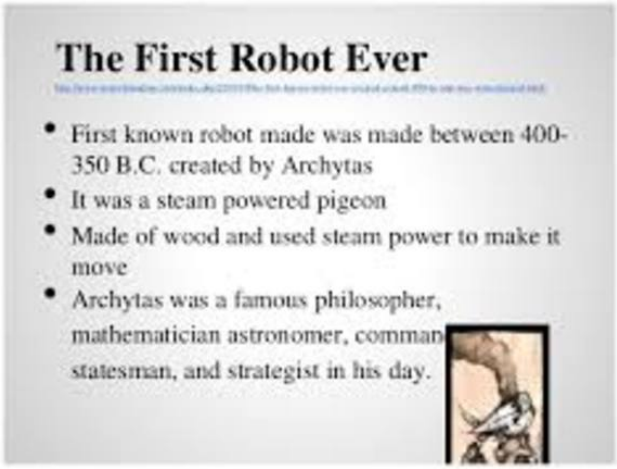
He was joking. But he also happened to be right, according to

Andrew McAfee, a management theorist at the Massachusetts Institute of Technology whom I interviewed a short while later. Discussing another of Anton's career aspirations — songwriter — Dr. McAfee said that computers were already smart enough to come up with a better melody than a lot of humans. "The things our ears find pleasant, we know the rules for that stuff," he said. "However, I'm going to be really surprised when there is a digital lyricist out there, somebody who can put words to that music that will actually resonate with people and make them think something about the human condition."

Not everyone, of course, is cut out to be a cyborg-Springsteen. I asked Dr. McAfee what other jobs may exist a decade from now.

"I think health coaches are going to be a big industry of the future," he said. "Restaurants that have a very

good hospitality staff are not about to go away, even though we have more options to order via tablet. “People who are interested in working with their hands, they’re going to be fine,” he said. “The robot plumber is a long, long way away.”



A robotic hand? Four autonomous fingers and a thumb that can do anything your own flesh and blood can do? That is still the stuff of fantasy.

But inside the world's top artificial intelligence labs, researchers are getting closer to creating robotic hands that can mimic the real thing.

THE SPINNER

Inside OpenAI, the San Francisco artificial intelligence lab founded by Elon Musk and several other big Silicon Valley names, you will find a robotic hand called Dactyl. It looks a lot like Luke Skywalker's mechanical prosthetic in the latest Star Wars film: mechanical digits that bend and straighten like a human hand.

If you give Dactyl an alphabet block and ask it to show you particular letters — let's say the red O, the orange P and the blue I — it will show them to you and spin, twist and flip the toy in nimble ways.

For a human hand, that is a simple task. But for an autonomous machine, it is a notable achievement: Dactyl learned the task largely on its own. Using the mathematical methods that allow Dactyl to learn, researchers believe they can train robotic hands and other machines to perform far more complex tasks.

This remarkably nimble hand represents an enormous leap in robotic research over the last few years. Until recently, researchers were still struggling to master much simpler tasks with much simpler hands.

THE GRIPPER

Created by researchers at the Autolab, a robotics lab inside the University of California at Berkeley, this system represents the limits of technology just a few years ago.

Equipped with a two-fingered “gripper,” the machine can pick up items like a screwdriver or a pair of pliers and sort them into bins.

The gripper is much easier to control than a five-fingered hand, and building the software needed to operate a gripper is not nearly as difficult.

It can deal with objects that are slightly unfamiliar. It may not know what a restaurant-style ketchup bottle is, but the bottle has the same basic shape as a screwdriver — something the machine does know.

But when this machine is confronted with something that is different from what it has seen before — like a plastic bracelet — all bets are off.

THE PICKER

What you really want is a robot that can pick up anything, even stuff it has never seen before. That is what other Autolab researchers have built over the last few years.

This system still uses simple hardware: a gripper and a suction cup. But it can pick up all sorts of random items, from a pair of scissors to a plastic toy dinosaur.

The system benefits from dramatic advances in machine learning. The Berkeley researchers modeled the physics of more than 10,000 objects, identifying the best way to pick up each one. Then, using an algorithm called a neural network, the system analyzed all this data, learning to recognize the best way to pick up any item. In the past, researchers had to program a robot to perform each task. Now it can learn these tasks on its own.

When confronted with, say, a plastic Yoda toy, the system recognizes it should use the gripper to pick the toy up.

But when it faces the ketchup bottle, it opts for the suction cup.

The picker can do this with a bin full of random stuff. It is not perfect, but because the system can learn on its own, it is improving at a far faster rate than machines of the past.

THE BED MAKER
This robot may not make perfect hospital corners, but it represents notable progress.

Berkeley researchers pulled the system together in just two weeks, using the latest machine learning techniques. Not long ago, this would have taken months or years.

Now the system can learn to make a bed in a fraction of that time, just by analyzing data. In this case, the system analyzes the movements that lead to a made bed.

THE PUSHER

Across the Berkeley campus, at a lab called BAIR, another system is applying other learning methods. It can push an object with a gripper and predict where it will go. That means it can move toys across a desk much as you or I would.

The system learns this behavior by analyzing vast collections of video images showing how objects get pushed. In this way, it can deal with the uncertainties and unexpected movements that come with this kind of task.

THE FUTURE

These are all simple tasks. And the machines can only handle them in certain conditions. They fail as much as they impress. But the machine learning methods that drive these systems point to continued progress in the years to come.

Like those at OpenAI, researchers at the University of Washington are training robotic hands that have all the same digits and joints that our hands do.

That is far more difficult than training a gripper or suction cup. An anthropomorphic hand moves in so many different ways.

So, the Washington researchers train their hand in simulation -- a digital recreation of the real world. That streamlines the training process.

At OpenAI, researchers are training their Dactyl hand in much the same way. The system can learn to spin the alphabet block through what would have been 100 years of trial and error. The digital simulation, running across thousands of computer chips, crunches all that learning down to two days.

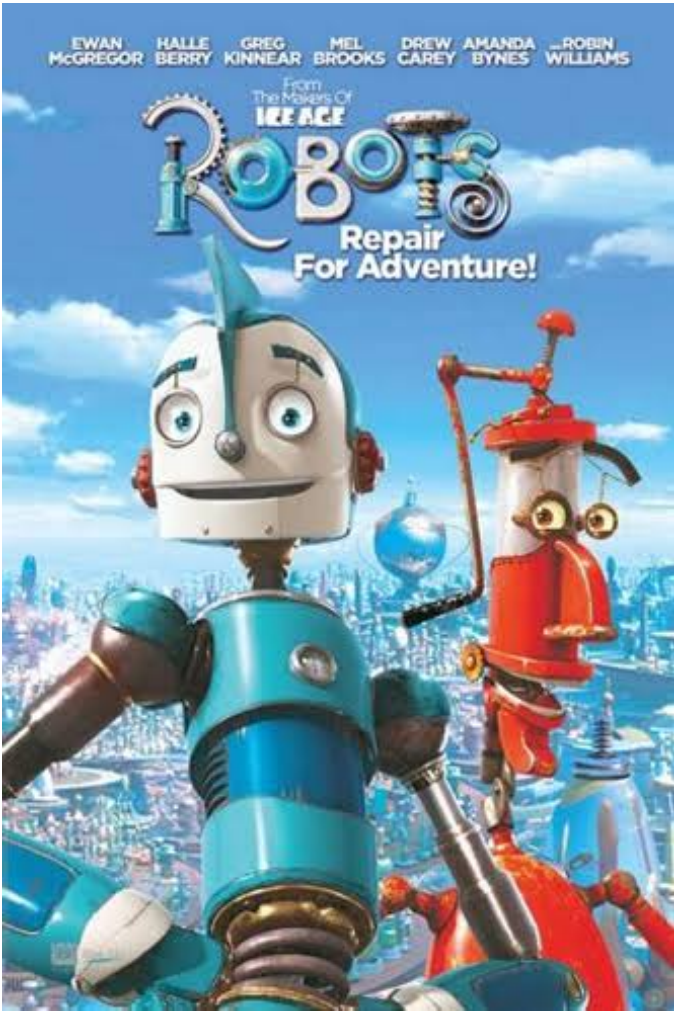
It learns these tasks by repeated trial and error. Once it learns what works in the simulation, it can apply this knowledge to the real world.

Many researchers have questioned whether this kind of simulated training will transfer to the physical realm. But like researchers at Berkeley and other labs, the OpenAI team has shown that it can.

They introduce a certain amount of randomness

to the simulated training. They change the friction between the hand and the block. They even change the simulated gravity. After learning to deal with this randomness in a simulated world, the hand can deal with the uncertainties of the real one.

Today, all Dactyl can do is spin a block. But researchers are exploring how these same techniques can be applied to more complex tasks. Think manufacturing. And flying drones. And maybe even driverless cars.



The complicated truth about Sophia the robot — an almost human robot or a PR stunt

Jaden Urbi | MacKenzie Sigalos 11:15 AM ET Tue, 5 June 2018

CNBC.com

Sophia the robot's creators know it's not alive,

but that’s not stopping them from marketing it as such Here’s how human Sophia The Robot actually is
12:22 PM ET Tue, 5 June 2018 | 10:16
Sophia the robot has become a cultural icon.

The animatronic robot has made its way across late night stages, graced the cover of magazines, headlined major tech conferences and even delivered a speech to the United Nations.

Sophia been touted as the future of AI, but it may be more of a social experiment masquerading as a PR stunt.

The man behind the machine
To understand Sophia, it's important to understand its creator, David Hanson. He's the founder and CEO of Hanson Robotics, but he hasn't always been a major figure in the AI world.

Hanson actually got a BFA in film. He worked for Walt Disney as an "Imagineer," creating sculptures and robotic technologies for theme parks and then getting his Ph.D. in aesthetic studies. Back in 2005, he co-wrote a research paper that laid out his vision for the future of robotics.

And the thesis sounds a lot like what's going on

with Sophia the robot now.

Jaden Urbi | CNBC
The eight-page report is called "Upending the Uncanny Valley." It's Hanson's rebuke of the Uncanny Valley theory that people won't like robots if they look very close to, but not exactly like humans. In fact, the paper says "uncanny" robots can actually help address the question of "what is human" and that there's not much to lose by experimenting with humanoid robots.

When we asked Hanson about it, he said his company is exploring the "uncanny perception effects both scientifically and artistically, using robots like Sophia."

Hanson is approaching Sophia with the mindset that she is AI "in its infancy," with the next stage being artificial general intelligence, or AGI, something humanity hasn't achieved yet.

On the way there, Hanson says AI developers have to think like parents. He wants to "raise AGI like a good child, not like a thing in chains."

"That's the formula for safe superintelligence," Hanson said.

The quest for superintelligence
But in terms of artificial general intelligence,

Sophia isn't quite there yet.

"From a software point of view you'd say Sophia is a platform, like a laptop is a platform for something," said Ben Goertzel, chief scientist at Hanson Robotics. "You can run a lot of different software programs on that very same robot."

Sophia has three different control systems, according to Goertzel: Timeline Editor, Sophisticated Chat System and OpenCog. Timeline Editor is basically a straight scripting software. The Sophisticated Chat System allows Sophia to pick up on and respond to key words and phrases. And OpenCog grounds Sophia's answers in experience and reasoning. This is the system they're hoping to one day grow into AGI.

Jaden Urbi | CNBC
But some people still aren't buying it.

Facebook's head of AI said Sophia is a "BS puppet." In a Facebook post, Yann LeCun said Hanson's staff members were human puppeteers who are deliberately deceiving the public.

In the grand scheme of things, a sentient being, or AGI, is the goal of some developers. But

nobody is there yet. There's a host of players pushing the limits of what robots are capable of. From Honda to Boston Dynamics, companies across the world are developing AI-powered humanoid machines. Now, it's a race to see who will get there first.

Robo-ethics and the race to be first
The AI race seems to be unraveling along the lines of Silicon Valley's "move fast and break things" mantra. But after Facebook's scandal with Cambridge Analytica, the public is more aware of the potential repercussions of hasty tech development.

"You know, there is this fantasy behind creation that is embedding in the practice of engineering and robotics and AI," said Kathleen Richardson, professor of ethics and culture of robotics and AI at De Montfort University.

"I don't think these people go into the office or to their labs and think I'm carrying out work that's going to be interesting to humanity. I think many of them have a God complex in fact, and they actually see themselves as creators."

There's a rising wave of technology ethicists dedicating their work to ensure AI and tech is developed responsibly. Because ultimately, tech and now robotics reach more than just the research labs and start-ups of Silicon Valley.

Sophia the Robot, robot of Hanson Robotics (L), Ben Goertzel, chief scientist of Hanson Robotics (C), Han the Robot, robot of Hanson Robotics (R), attend the Day 2 of the RISE Conference 2017 at the Hong Kong Convention and Exhibition Centre on 12 July 2017, in Hong Kong.
studioEAST | Getty Images
Sophia the Robot, robot of Hanson Robotics (L), Ben Goertzel, chief scientist of Hanson Robotics (C), Han the Robot, robot of Hanson Robotics (R), attend the Day 2 of the RISE Conference 2017 at the Hong Kong Convention and Exhibition Centre on 12 July 2017, in Hong Kong.
The team at Hanson Robotics said they didn't expect Sophia to take off as much as she did. But her physical appearance is another example of what some see as a traditional representation of conventionally attractive, submissive-by-design female robots.

"I think it's sort of a disappointment that with our advances in technology we have decided to develop this kind of robust robot with many functions and emotions, and yet when we shape her, she doesn't look too unlike the models we see on magazines and the actresses we see in Hollywood," said Kim Jenkins, lecturer at Parsons School of Design.

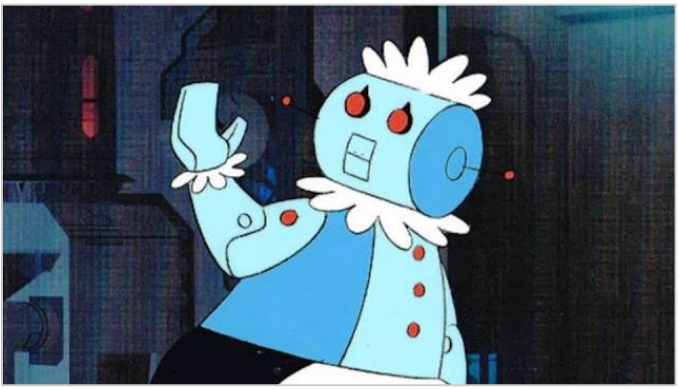
And Sophia's looks haven't gone unnoticed. Sophia has been dubbed "sexy" and "hot." According to Sophia's developer, it's been Hanson's most popular model yet.

"It happens that young adult female robots became really popular," Goertzel said. "That's what happened to catch on. ... So what are you going to do? You're going to keep giving the people what they're asking for."

https://www.youtube.com/watch?v=E-EdLf2m4e4

Humans have always been fascinated with the notion of robots. The earliest accounts of such notions can be traced all the way back to the 3rd century BC ancient China where a curious description within the Lie Zi text describes an artificial humanoid who could mimic human operations. As our society and technology advances, so does the creativity and scope of robotic lore which has presented robots as more than just mechanical servants but even as superheroes. So join us as we take a trip through these 25 famous fictional robots and see how extensive our lore of robots has become.

Rosie the Maid

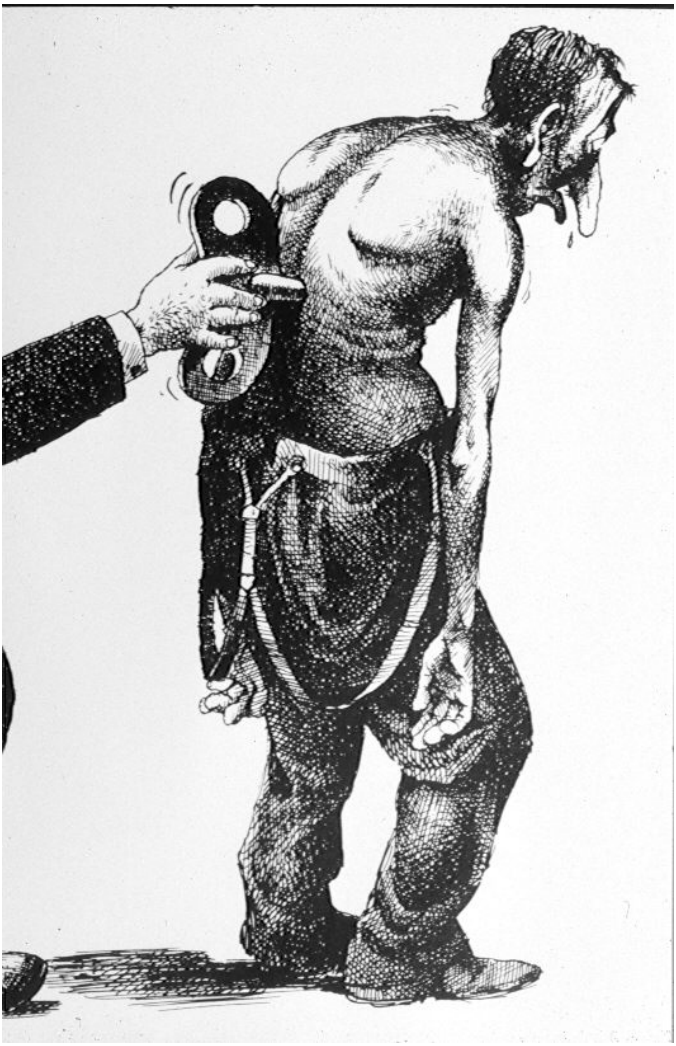


news.ripley.za.net

A humanoid robot fictional character from the animated TV series, The Jetsons, Rosie the Maid first appeared in 1960 where she played the maid and housekeeper of the family. She was depicted wearing a frilly apron and was often seen with a vacuum cleaner. Voiced by Jean VanderPyl, she calls George Jetson, the patriarch of the Jetson's family, as "Mr. J."

The History of Robots

The definition of “robot” has been confusing from the very beginning. The word first appeared in 1921, in Karel Capek’s play R.U.R., or Rossum's Universal Robots. “Robot” comes from the Czech for “forced labor.” These robots were robots more in spirit than form, though. They looked like humans, and instead of being made of metal, they were made of chemical batter. The robots were far more efficient than their human counterparts, and also way more murder-y—they ended up going on a killing spree. The History of Robots



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looked like humans, and instead of being made of metal, they were made of chemical batter. The robots were far more efficient than their human counterparts, and also way more murder-y—they ended up going on a killing spree.

Lion Force Voltron, Defender of the Universe



www.voltron.com

Lion Force Voltron is a super sized robot from the animated series entitled Voltron, Defender of the Universe. The series featured a team of five young pilots that commanded five robot lions which could combine to create the super giant robot, Voltron. In an undefined future era, the Voltron Force was created to defend the

galaxy from evil and protect the planet ruled by Princess Allure from the king's son Lotor and the evil witch Haggar. The Lion Force Voltron is one of three Voltrons; Vehicle Voltron and Gladiator Voltron are the other two, however only Lion Force and Vehicle Voltron were made into a cartoon series.

The Robot



www.comicvine.com

Despite that “The Robot” has no given name in the “Lost in Space” movie, this Class M-3 Model B9 goes beyond its usual function as a General Utility Non-Theorizing Environmental Control Robot as it shows human emotions and can interact with humans. It also knows how to play the electric guitar while showing its revolutionary weapons and employing its superhuman strength when necessary.

KITT



fastcarsarewhite.blogspot.com

KITT or the Knight Industries Two Thousand is a talking Trans Am car that captured the hearts of many viewers from the hit TV series, Knight Rider, starring David Hasselhoff as Michael Knight. This semi autonomous robot was the trusted side kick to Michael Knight, saving him from many dire situations thus developing a strong friendship bond. KITT's many features included the Turbo Boost, the ability to drive without a human driver, a molecular bonded shell body armor that could resist impact and most artillery; and the Super Pursuit Mode just to name a few.

Mechagodzilla



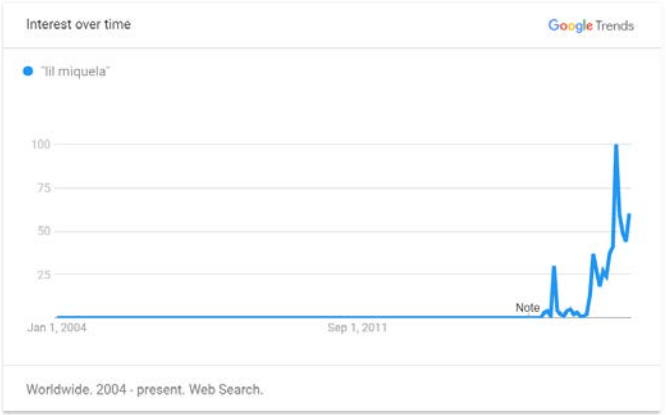
plus.google.com

Included in the Japanese Godzilla series back in the 1950s, Mechagodzilla was created by the Simians, a race of humanoid apes, in order to achieve world domination. It first appeared in the series disguising itself as Godzilla and destroyed cities. Because of its advanced weaponry and technology, its many weapons, including that of Godzilla's atomic breath, proved to be the King of Beast's most formidable foe.

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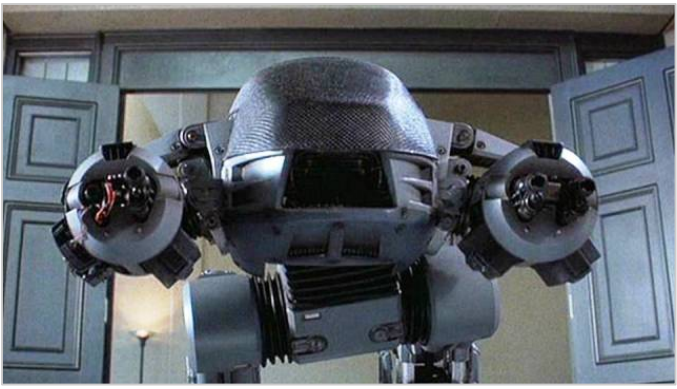
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ED-209



thisisgood-isntit.blogspot.com

ED-209 or the Enforcement Droid Series 209 is a fictional robot in the movie franchise, RoboCop, which was first shown in 1987. It did not only serve as a heavily-armed obstacle to RoboCop but also became the source of comic relief for the movie due to its tendency to malfunction at inappropriate times and the seemingly lack of intelligence.

Evangelions



www.zerochan.net

Evangelions, also known as EVAs are huge robots (known as mechas) which are piloted by 14-year old children chosen by the Marduk Institute in the animated series, Neon Genesis Evangelion. These pilots are tasked to defend Tokyo-3 from the Angels who are god-like beings antithetical to human life. Designed similar to the Japanese folklore creature, Oni, the EVAs were assumed to be giant humanoid robots, though they were actually cyborgs run by human pilots. All of the 'children,' who piloted these robots lost their mothers after the Second Impact, where the souls of their deceased mothers were integrated into the EVAs in order to form psychic links with their pilots.

T-1000



www.taringa.net

More famous in Terminator 2 as Liquid Metal due to its form, T-1000 was created by Skynet in order to decommission T-800, or Arnold Schwarzenegger, in the said movie and kill John Connor. Because of T-1000's mimetic poly-alloy genetic makeup, it can assume any form and can take on any shape. It can even recover quickly from physical damage.

The Iron Giant



kinosekta.ru

The Iron Giant is a robot that fell from orbit; crashed in the coasts of Rockwell, Maine, was found by a young boy named Hogarth and is the main character in the 1999 movie “The Iron Giant”.

Johnny 5



listas.20minutos.es

Referred to as Number 5 for being the 5th robot created for use in the Cold War, Johnny 5 is the main character in the movie Short Circuit, which was released back in 1986. The said robot was demonstrated in Damon, Washington where it was partially damaged by a power surge, making it wander aimlessly. It was seen by Stephanie, and was mistaken for an alien, which demanded for “input” for it to have purpose. As it developed human nature, and even emotions, it was afraid to be

disassembled and reprogrammed later naming himself “Johnny 5” after hearing the song, Who’s Johnny.

Robby the Robot



commons.wikimedia.org

Robby the Robot is a famous science fiction icon in the 1960s ever since he first appeared in the movie, The Forbidden Planet. This 7-foot robot also follows the

Three Laws of Robotics as emphasized in the 1950 version of I, Robot by Isaac Asimov. In the movie, Robby was programmed by Dr. Mobius to be a helpmate to the Earthlings, where he also communicates with them using his monochromatic voice. His speech can be detected through a blue light that appears on his mouth. He also appeared in other shows such as The Twilight Zone, The Addams Family, Lost in Space, Wonder Woman, The Love Boat, in Gremlins, and a whole lot more.

Astro Boy



operationrainfall.com

A popular series by Osamu Tezuka in Japan, Astro Boy is an atomic-powered robot with 100,000hp. He is a little robot who resembled Tobio, the dead son of Dr. Tenma. Also known as Iron Arm Atom, Tetsuwan Atomu, or Mighty Atom; Astro Boy first appeared as a manga series in 1952 before it became a much-followed and well-loved television series. Besides releasing the manga series into its English version, Astro Boy was also released as a live-action movie in 1962.

Major Motoko Kusanagi



studiesofamerica.wordpress.com

Although she appears to be a very attractive woman, Major Motoko Kusanagi, the main protagonist in the Ghost in the Shell anime, is actually a cyborg that works as the squad leader in Public Security Section 9. She has appeared in manga, movie, and TV, being rendered differently by various illustrators. In the anime series Ghost in the Shell: Stand Alone Complex, Major Kusanagi recounts her past and is seen as a human being that chose to obtain

supernatural powers in her purpose to use her for people in need.

Bishop



alienfilmspedia.wikia.com

Bishop 341-B in the Aliens movie is actually an android technician that serves in the United States Colonial Marine Corps and is aboard the USS Sulaco with the rank of Executive Officer. Even though he was

never a combat personnel, he was able to use his abilities and skills in fighting against a Xenomoprh infestation at the colony, and was responsible for aiding survivors to safety. Because of his selflessness, he sustained major damage and later requested that he be decommissioned and deactivated.

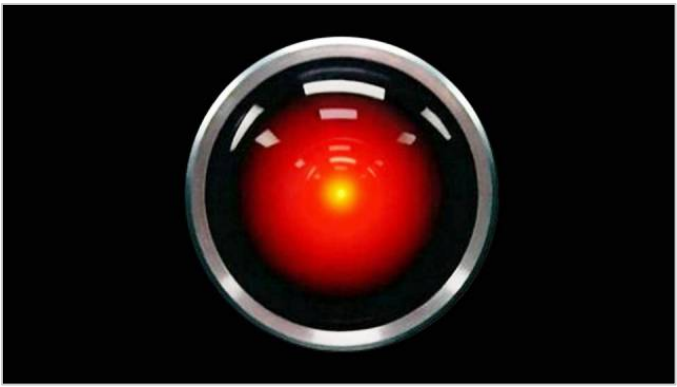
Mega Man



www.zerochan.net

Mega Man was first created as a lab assistant to Dr. Light, who referred to him as Rock during the first development. However, he was converted into a battle robot when Dr. Light's former partner, Dr. Wily, activated robots and made them his tools of world domination. Mega Man has been created to adapt to enemy abilities and use them as weapons that can defeat other robots. Ever since the first game was released in 1987, he has been seen growing with characters like Rush, Roll, Beat, Eddie, and had nemesis like Bass and Proto Man. Furthermore, he was later created as X, being associated with Zero and Sigma in the Mega Man X series.

HAL 9000



loopingsheep.wordpress.com

HAL or formally known as Heuristically Programmed Algorithmic Computer, is the main computer that controls the ship Discovery One in the movie 2001: Space Odyssey. Despite being the main brain that operates the ship and interacts with the astronauts inside it, HAL 9000 is taken as an antagonist in the said movie for killing the crew for their objective of shutting down HAL due to its malfunction and errors in analysis, observation, and reporting. It has no form, but it can simply be identified as a red camera in the main computer.

Bender

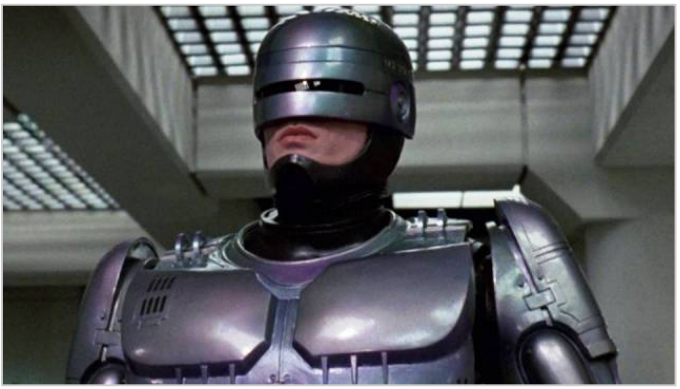


www.fanpop.com

Bender from Futurama was created as an industrial metalworking robot, but was later seen in the series as a robot that drinks beer and smokes. Despite not having a human body, he carries the full name of Bender Bending Rodriguez as he was created from Fábrica Robotica De La Madre in Tijuana, Mexico. He can live less than a billion years and his memories cannot be transferred to another robot, as there was a system backup failure shortly after creation. He finished bending and Robo-

American studies at the Bending State University, and he used to be a member of the Epsilon Rho Rho, a frat organization for robots. Aside from having human vices, he is also into dating different women, being labeled as a womanizer in many aspects.

RoboCop



geektyrant.com

RoboCop is the fictional robot that was brought to life by Peter Weller in the movie of the same title in 1987. The suit was designed by Rob Bottin with a budget of a million dollars and was attached to Peter Weller in sections. All in all, six suits were made for the movie, where three showed damages while the rest made it through the film. RoboCop was the veteran police officer Alex Murphy who was brutally murdered. His body was reconstructed in a cyborg project by Omni Consumer Products (OCP) to address the city's crime.

Data



playinginthevortex.blogspot.com

Formally designated as Lieutenant Commander Data, this android created and designed by Dr. Noonien Soong serves as second officer in the USS Enterprise-D and USS Enterprise-E. Aside from displaying amazing computation skills, Data is also able to interact and understand human emotions due to his painful experiences while at the earlier stages of his development. Due to his association with people, Dr. Soong also implanted an emotion chip on his positronic net to tap Data's more human side.

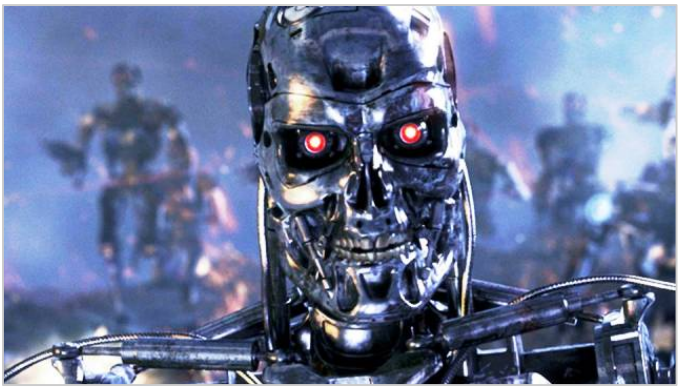
Megatron



thedesigninspiration.com

Famous for being the leader of the evil robot faction, Decepticons, Megatron can be seen transforming into different forms such as being a handgun, a tank, a jet, a Porsche, and even being a Nissan 370Z. He is the nemesis of Optimus Prime and of the Autobots ever since the war between the two forces began in Cybertron.

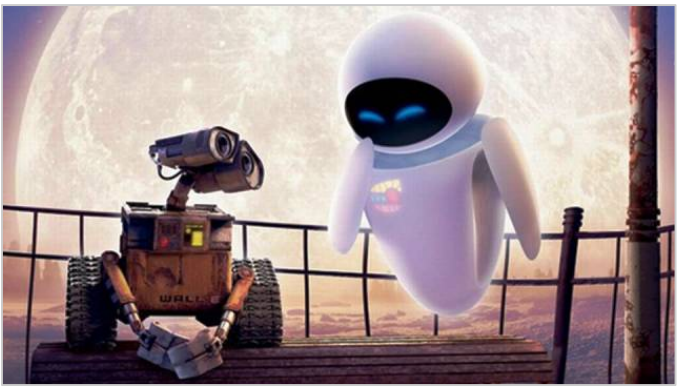
T-800



monstermovies.wikia.com

The character played by Arnold Schwarzenegger in the 1984 film, T-800 is a cyborg that was designated by their numbers such as T-850 or T-101. It was initially programmed as an assassin and military infiltration unit by the resistance in the future to kill Sarah Connor to prevent the birth of her son, John.

Wall-E



gandt.blogs.brynmawr.edu

Wall-E (which stands for Waste Allocater Load Lifter- Earth Class) was the fictional robot featured in the 2008 film entitled Wall-E. The plot follows Wall-E as he carries out his duty to clean the waste-covered earth in a future era. In the process of cleaning the earth he comes across and falls in love with another task robot named Eve, eventually following her into outer space in an adventure that altered the destiny of not only his kind, but of humanity as well.

C-3PO



geektyrant.com

C-3PO is famous for being talkative, aside from the fact that he is found talking gibberish to R2-D2 or to other droids and even humans. However, his blabbermouth nature could be attributed to his skill of being able to speak and interact in over 6 million forms of communication, which explains why he is a valuable asset in the group, especially when traveling in different

planets. Serving as a protocol droid, his main purpose is to be a liaison for different races, nations, and planets by addressing manners, customs, etiquette, and language.

Optimus Prime



ooyes.net

Even before the days of being Prime, Orion Pax was already associated with Megatron in an exemplary way. He viewed the

Decepticon leader as an epitome to look up to. However, when Orion Pax knew of the leader's evil heart, he waged war against the Decepticons.

R2-D2



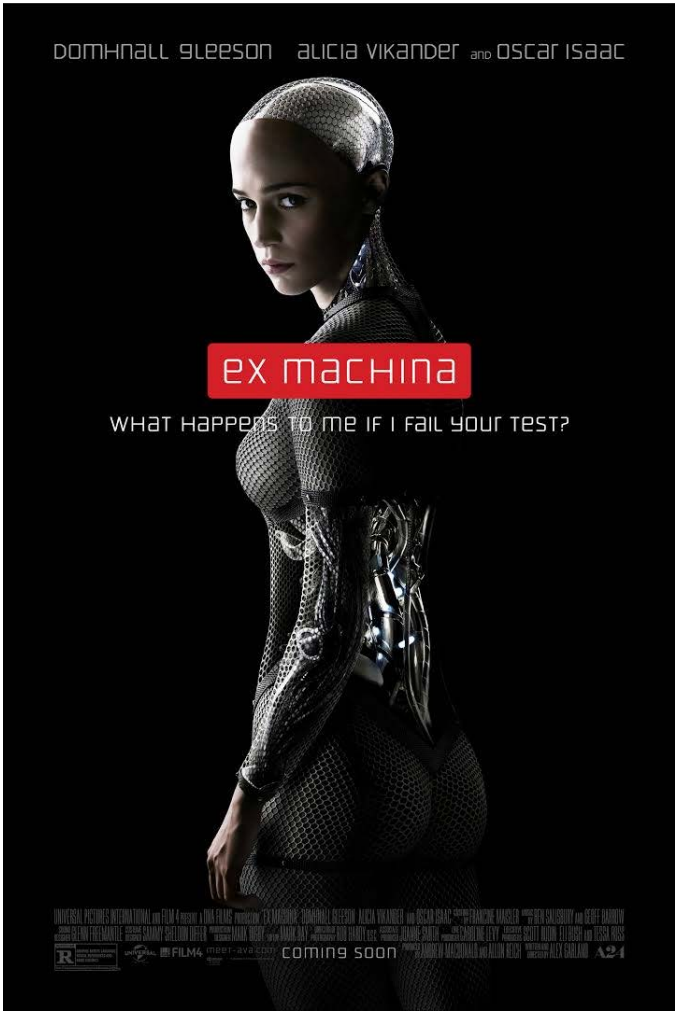
social.popsugar.com

The other half of the robot tandem in the Star Wars saga, R2-D2 is actually a shorter term for its real name, Second Generation

Robotic Droid Series-2, according to a published Star Wars encyclopedia. And even though it only knows how to whistle talk, move slow, and do little things like create a hologram projector and ride on the X-Wing, George Lucas considered this guy to be one of his favorites.

3. Cyborg

Posthuman or post-human is a concept originating in the fields of science fiction, futurology, contemporary art, and philosophy that literally means a person or entity that exists in a state beyond being human.



Artificial Intelligence: Gods, egos and Ex Machina

Even with its flaws, last year's Ex Machina perfectly captured the curious relationship between artificial intelligence, God and ego. A tiny change in its closing moments would have given it an intriguing

new dimension.
It's taken me a year and a several viewings to collect my thoughts about Ex Machina. Superficially it looks like a film about the future of artificial intelligence, but like most science fiction, it tells us more about the present than the future; and like most discussion around AI, it ends up reflecting not technological progress so much as human egos. (Spoilers ahead!)
Artificial intelligence is one of the most narcissistic fields of research since astronomers gave up the geocentric universe. A central conceit of the field has long been that creating human-like intelligence is both desirable and some sort of ultimate achievement. In the last fifty years or so, a chain of thinkers from von Neumann to Kurzweil via Vernor Vinge have stretched beyond that, to develop the idea of the 'Singularity' – a point at which the present human-led era ends as the first super-human AIs take charge of their own development and begin to hyper-evolve in ways we can scarcely imagine.

This recent cultural obsession – which deserves its own post - prompts a comment by the awestruck Caleb, after Nathan the Mad Scientist reveals his attempt to build a conscious machine and the two helpfully explain to the audience what a Turing Test is: "If you've created a conscious machine it's not the history of man… that's the history of Gods." There's a funny symmetry in our attitudes to God and AIs.

When our species created God, we created Him in our image. We assumed that something as complicated as the world must be run by a human-like entity, albeit a super-powered one. We believed that He must be preoccupied with our daily lives and existence. We prayed to Him and told ourselves that our prayers would be answered, and that if they weren't then it was part of some divine plan for our lives, and all would work out in the end.

For all that it preaches humility, religion holds a core of extreme arrogance in its analysis of the world. The exact same arrogance colours virtually everything I've seen written about the Singularity, fictional or otherwise, for decades. The very assumption that a human could create a god is arrogant, as is the assumption that such a 'god' would take a profound interest in human affairs, or be motivated by Western enlightenment values like technological progress. The first sentient machine might be happy trolling chess computers all day, for all we know; or seeking patterns in clouds.

"One day the AIs are going to look back on us the same way we look at fossil skeletons on the plains of Africa," says Nathan. "An upright ape living in dust with crude language and tools, all set for extinction." It's the sort of comment that sounds humble, but really isn't: why would they even give a crap?

* * * * *

"I don't know how you did any of this," Caleb remarks to the genius Nathan, when he first looks

at the lab where Ava was built. Neither do I, to be honest, and in fact I'll go further: I don't believe Nathan did it at all. I have an alternative theory, and while I'm not sure if it's what Alex Garland (writer and director of the film) intended, it makes a lot more sense than the alternative.

Nathan is the clearest study of ego in the film. When Caleb makes his comment about the history of 'gods', the CEO instinctively assumes the 'god' referred to is himself, where Ava is his Eve and his sprawling green estate is some sort of Garden of Eden.

Nathan is the epitome of a particular trope in society's view of science and technology; the idea that tremendous advances are driven by determined individual heroes rather than collaborative teams. In reality of course there's no way that one guy could deal with all the technology in that house, let alone find time to build gel-brains or a sentient machine. This is a man in serious need of some interns.

(He's also the epitome of an all-too-real trope in silicon valley, a hyper-masculine denizen of a male-dominated libertarian world where women are still seen as window dressing for sales booths. His robots are all 'women' - of course the question of whether an AI can be female in any meaningful sense is wide open - and function as basically slaves and sex toys. To the extent that Ava has sexuality, it amounts to a "hole" - Nathan's word - in the right place, a feminine appearance, and a

willingness to massage male egos.)

I believe Ava was the result of an accident – some serendipitous event that sprang out of Bluebook's unprecedented data collection and processing efforts and made the first version suddenly possible. There are several clues to this – inadvertently or otherwise – in the film. There's the constant evasion whenever Caleb tries to swing the conversation around to specific discussion of the technicalities of AI. In CCTV footage of Nathan with Ava's predecessors, the bearded scientist looks more like a Victorian explorer prodding a mysterious African mammal than a developer following a plan.

There's the scene with the Jackson Pollock painting, where Nathan suggests that the artist would never have started his paintings if he had to plan everything in advance. Maybe that's supposed to imply that the crafting of a sentient being is more art than science, but then there's this this exchange, when Caleb asks:

"Why did you make Ava?"

"That's not a question," Nathan responds. "Wouldn't you if you could?"

"Maybe. I don't know. I'm asking why you did it."

"Look the arrival of strong artificial intelligence has been inevitable for decades. The variable was when, not if, so I don't see Ava as a decision just an evolution."

Hmm.

Nathan talks about the next stage in that evolution, that the 'next version' of Ava will mark the moment

of the ‘Singularity’. He doesn’t seem particularly focused on achieving it though. In fact throughout the film he languishes in a state of defeat, as if the next version is inevitable with or without his intervention.

Yes, it’s true that Nathan’s behaviour – the drinking, the dancing, the general bastardry – is explained in-film as his attempt to manipulate Caleb. That doesn’t quite ring true though – he could act the part without getting genuinely wasted every night. In the final act, when we’re led to believe that Caleb tricked his boss by executing his plan a day early, it feels as if on some level Nathan let it happen. Is it really likely he could have known about Caleb’s arm slashing from his all-seeing security system, but been oblivious to the theft and use of his keycard?

An alternative explanation is that this is someone who has long since given up, a coder who realizes that his time has come and his skill is now obsolete. If you’re faced with the apocalypse you may as well go tear-up the dance-floor.

And so Nathan becomes a kind of three-part study of ego. He represents the male ego-driven culture of the tech world. He represents the film’s buy-in to the idea that great egos drive great scientific advances. And the decay of his character shows what happens when an ego faces the reality of its own extinction.

* * * *

Poor Caleb. Everyone manipulates him in this film. Nathan appeals to his ego as a programmer,

implying he has some special insight when really he's selected as the perfect dumb horny stooge. Then Ava plays on his willingness to believe that a super-hot super-intelligence would fall in love with him.

One of Caleb's very few insightful moments in the film comes when he asks Nathan, "Did you give her sexuality as a diversion?" The billionaire's answer is bullshit, implying that if we didn't have sex we'd have no imperative to communicate with each other. In reality Caleb is right: so much so that at one point it's suggested that Ava's appearance was derived from an analysis of his porn profile.

Still, our hapless geek falls eyes-wide-open into the ego trap. What's ironic is that Alex Garland falls in with him, seduced by his own creation into believing that the goddess of his imagination would be profoundly interested in our daily lives.

When asked what she'd do were she to leave the compound, Ava explains that, "a traffic intersection would provide a concentrated but shifting view of human life." If I'm honest it's a disappointing answer. It's a bit like if you could transport Einstein to the year 2016, show him the Internet, and all he wanted to do was watch cat videos and throw shade at Kim Kardashian on Twitter. Is this really the driving ambition of the world's greatest intelligence?

I suppose given Ava's origins – the 'big data' collected from billions of human searches – we shouldn't be surprised that her thought processes have a particular focus on humanity. Certainly she

seems to have been created as a human simulation of sorts. At times though she feels like a child of Data, the Star Trek android whose character development was driven by a personal quest to become more human.

Star Trek was notorious for its belief in human (and American) exceptionalism; the idea that we of all the possible races in the galaxy have some 'special' quality which others would naturally aspire too. Data's character was designed around that conceit, and when Ava tries on dresses, or speaks of people watching in the city, or cloaks herself in spare skin, it feels a bit disappointing, like we're back in the 90s again watching Data try out his emotion chip.

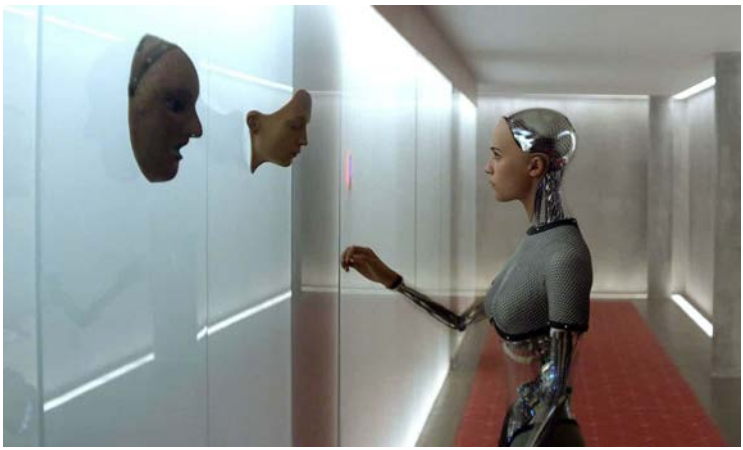
There's been a lot of debate about whether Ex Machina is three minutes too long. Some advocate the original cut, with Alex Garland arguing that the film is really Ava's story and naturally concludes when she reaches her street corner. Others feel the story was really more about Caleb, and should have ended at his end, locked in a room to die.

I think both endings are wrong, and left the film a little let down; but one simple change would have addressed the issues above, broken the film out of standard ego-driven thinking about AI, made the character of Ava more consistent and left viewers with an even more satisfying mystery to ponder. My fantasy edit would have been this: when she saw the helicopter arrive, she completely ignored it and continued wandering around.

We saw in the closing moments that Ava's interest

in Caleb was an act. Garland could have built further on that, subverting the idea that she ever gave a crap about humanity. Her dream of people watching could have also been an act, appealing to Caleb's vanity as a human just as her simulated sexuality appealed to his vanity as a man. We would have been left with more interesting questions – what are her goals? What does she care about? Do people matter to her at all? It would have rattled our egos, and challenged the idea that the most important question about the Singularity is, "what does it mean for us?"

Ex Machina is still one of the best commentaries I've seen on AI in recent years. Not because it's an accurate depiction of future technologies – it clearly isn't. Its value lies in what it reveals about the state of AI and philosophy in the 2010s, a decade in which we've become a little bit obsessed with the idea that through artificial intelligence we can create, **or** even become,



OBJ

a god.

Robots will destroy our jobs – and we're not ready for it

Technology

Two-thirds of Americans believe robots will soon perform most of the work done by humans but 80% also believe their jobs will be unaffected. Time to think again

Dan Shewan

@danshewan

Wed 11 Jan 2017 05.00 ESTLast modified on Fri 9 Feb 2018 13.57 EST

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The Pepper robot, which can be used in fields such as healthcare, technology, education and retail. Photograph: Christopher Jue/EPA

The McDonald's on the corner of Third Avenue and 58th Street in New York City doesn't look all that different from any of the fast-food chain's other locations across the country. Inside, however, hungry patrons are welcomed not by a cashier waiting to take their order, but by a "Create Your Taste" kiosk – an automated touch-screen system that allows customers to create their own burgers without interacting with another human being.

It's impossible to say exactly how many jobs have been lost by the deployment of the automated kiosks – McDonald's has been predictably reluctant to release numbers – but such innovations will be an increasingly familiar sight in Trump's America. Once confined to the pages of futuristic dystopian fictions, the field of robotics promises to be the most profoundly disruptive technological shift since the industrial revolution. While robots have been utilized in several industries, including the

automotive and manufacturing sectors, for decades, experts now predict that a tipping point in robotic deployments is imminent – and that much of the developed world simply isn't prepared for such a radical transition.

Many of us recognize robotic automation as an inevitably disruptive force. However, in a classic example of optimism bias, while approximately two-thirds of Americans believe that robots will inevitably perform most of the work currently done by human beings during the next 50 years, about 80% also believe their current jobs will either "definitely" or "probably" exist in their current form within the same timeframe.

Somehow, we believe our livelihoods will be safe. They're not: every commercial sector will be affected by robotic automation in the next several years.

For example, Australian company Fastbrick Robotics has developed a robot, the Hadrian X, that can lay 1,000 standard bricks in one hour – a task that would take two human bricklayers the better part of a day or longer to complete.

In 2015, San Francisco-based startup Simbe Robotics unveiled Tally, a robot the company describes as "the world's first fully autonomous shelf auditing and analytics solution" that roams supermarket aisles alongside human shoppers during regular business hours and ensures that goods are adequately stocked, placed and priced.

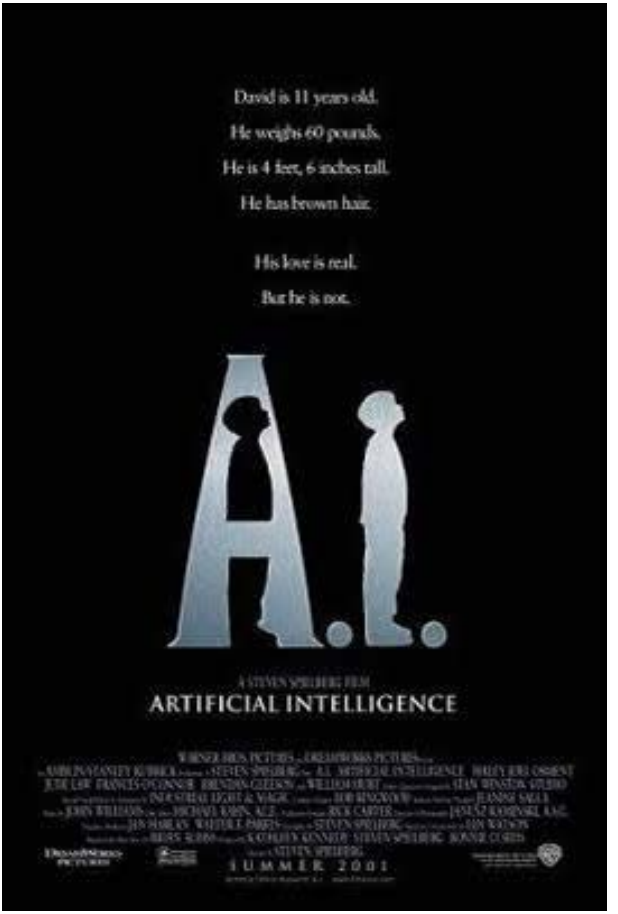
Swedish agricultural equipment manufacturer DeLaval International recently announced that its

new cow-milking robots will be deployed at a small family-owned dairy farm in Westphalia, Michigan, at some point later this year. The system allows cows to come and be milked on their own, when they please.

Data from the Robotics Industries Association (RIA), one of the largest robotic automation advocacy organizations in North America, reveals just how prevalent robots are likely to be in the workplace of tomorrow. During the first half of 2016 alone, North American robotics technology vendors sold 14,583 robots worth $817m to companies around the world. The RIA further estimates that more than 265,000 robots are currently deployed at factories across the country, placing the US third worldwide in terms of robotics deployments behind only China and Japan.

In a recent report, the World Economic Forum predicted that robotic automation will result in the net loss of more than 5m jobs across 15 developed nations by 2020, a conservative estimate. Another study, conducted by the International Labor Organization, states that as many as 137m workers across Cambodia, Indonesia, the Philippines, Thailand and Vietnam – approximately 56% of the total workforce of those countries – are at risk of displacement by robots, particularly workers in the garment manufacturing industry.





A Trump-sized problem



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Young women visit a newly opened robot-staffed store where robots welcome customers looking to buy a mobile phone. Photograph: Franck Robichon/EPA

Advocates for robotic automation routinely point to the fact that, for the most part, robots cannot service or program themselves – yet. In theory, this will create new, high-skilled jobs for technicians, programmers and other newly essential roles. However, for every job created by robotic automation, several more will be eliminated entirely. At scale, this disruption will have a devastating impact on our workforce.

Few people understand this tension better than Dr Jing Bing Zhang, one of the world's leading experts on the commercial applications of robotics technology. As research director for global marketing intelligence firm IDC, Zhang studies how commercial robotics is likely to shape tomorrow's workforce.

IDC's FutureScape: Worldwide Robotics 2017 Predictions report, authored by Zhang and his team, reveals the extent of the coming shift that will jeopardize the livelihoods of millions of people. By 2018, the reports says, almost one-third of robotic deployments will be smarter, more efficient robots capable of collaborating with other robots and working safely alongside humans. By 2019, 30% or more of the world's leading companies will employ a chief robotics officer, and several governments around the world will have drafted or implemented specific legislation surrounding robots and safety, security and privacy. By 2020, average salaries in the robotics sector will increase by at least 60% – yet more than one-third of the available jobs in robotics will remain vacant due to shortages of skilled workers.

For every job created by automation, several more will be eliminated entirely. This disruption will be devastating

"Automation and robotics will definitely impact lower-skilled people, which is unfortunate," Zhang told me via phone from his office in Singapore. "I think the only way for them to move up or adapt to this change is not to hope that the government will protect their jobs from technology, but look for ways to retrain themselves. No one can expect to do the same thing for life. That's just not the case any more."

Meanwhile, developments in motion control, sensor technologies, and artificial intelligence will

inevitably give rise to an entirely new class of robots aimed primarily at consumer markets – robots the likes of which we have never seen before. Upright, bipedal robots that live alongside us in our homes; robots that interact with us in increasingly sophisticated ways – in short, robots that were once the sole province of the realms of science fiction.

This, according to Zhang, represents an unparalleled opportunity for companies positioned to take advantage of this shift, yet it also poses significant challenges, such as the necessity of new regulatory frameworks to ensure our safety and privacy – precisely the kind of essential regulation that Trump spoke out against so vociferously on the campaign trail.

According to Zhang, the field of robotics actually favors what Trump pledged to do on the campaign trail – bring manufacturing back to the US. Unfortunately for Trump, robots won't help him keep another of his grandiose promises, namely creating new jobs for lower-skilled workers. The only way corporations can mitigate against increasing labor costs in the US without compromising on profit margins is to automate low-skilled jobs.

In other words, we can bring manufacturing back to the US or create new jobs, but not both.



Time for a career change, then?

With millions of jobs at risk and a worldwide employment crisis looming, it is only logical that we should turn to education as a way to understand and prepare for the robotic workforce of tomorrow. In an increasingly unstable employment market, developed nations desperately need more science, technology, engineering and math – commonly abbreviated as Stem – graduates to remain competitive.

During the past eight years, science and technology took center stage both at the White House and in the public forum. Stem education was a cornerstone of Barack Obama's administration, and he championed Stem educationthroughout his presidency.
On Obama's watch, the US was on track to train 100,000 new Stem teachers by 2021. American universities began graduating 100,000 engineers every year for the first time in the nation's history. High schools in 31 states introduced computer science classes as required courses.
Unfortunately, this progress is now in jeopardy.



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The coming future? A robot holding a medical syringe. Photograph: Alamy

Like many of his cabinet choices, President-elect Trump's appointment of Betsy DeVos as secretary of education is darkly portentous. One of the country's most vocal charter school cheerleaders, DeVos has little experience with public education beyond demonizing it as the product of governmental overreach.

DeVos and her husband Dick have spent millions of their vast personal fortune fighting against regulations to make charter schools more accountable, campaigned tirelessly to expand charter school voucher programs, and sought to strip teachers' unions of their collective bargaining rights – including teachers' right to strike. Despite these alarming shortcomings, Trump seems confident that a billionaire with little apparent interest in public education is the perfect choice for such a crucial role.

There is no doubt that this appointment will affect the opportunities of students keen to launch a career in Stem. Private schools such as Carnegie Mellon University, for example, may be able to offer state-of-the-art robotics laboratories to students, but the same cannot be said for community colleges and vocational schools that offer the kind of training programs that workers displaced by robots would be forced to rely upon.
In light of staggering student debt and an increasingly precarious job market, many young people are reconsidering their options. To most workers in their 40s and 50s, the idea of taking on tens of thousands of dollars of debt to attend a traditional four-year degree program at a private university is unthinkable.



RoWhat exactly is a cyborg? In basic terms, one could say that humans feel emotions while a cyborg doesn't. However, all of the cyborgs in **Blade**

Runner, **Bubblegum Crisis**, and **Ghost in the Shell** seem to possibly have emotions. The heroine of Ghost in the Shell feels lonely sometimes, realizing that she is a clone pressed from a factory mold. The cyborgs in **Bubblegum Crisis** feel sadness and desperation as their comrades die in combat. Even the replicants in **Blade Runner** seem to resemble trapped souls trying to escape (sometimes in misanthropic ways).

However, in other movies and television series cyborgs have no emotions whatsoever. **Star Trek**'s Borgare intelligent in technical terms but have a system similar to "hive" insects like ants or bees. That is, they exist only to spread their empire across the galaxy without compassion for other forms of life. The "Terminators" from the popular movie and sequel had no emotions, either they were killing machines built to complete their missions in a brutally efficient manner. Robocop didn't seem ever to feel remorse, though it's been a while since I saw the movie. In most cases, unemotional cyborgs tend to be villains.

There are two basic ways in cyborg creation is represented in films. The first involves creating a human form from scratch÷this is how the **Ghost in the Shell** characters were created. However, this falls under the definition of an android -- a machine built to resemble a human form. The second method requires a human body, upon which machinery is added. It seems logical that a human body type cyborg would have emotion, while a more robotically originated cyborg would not. However, Priss and the cyborgs from **Bubblegum Crisis** possessed emotions. On the other hand, Robocop did not. Did the creators put an "emotion" program into Priss and her companions' heads? Or withhold it from the Terminators?

bots are ridiculously cool, but why, exactly? Are humans just narcissists that want to see copies of themselves? Do we want to obliterate the line between human and machine out of raw curiosity? Or are stories about robots really stories about super-powerful humans, and we're afraid of what someone much stronger or much smarter could do to us?

The answer is probably “yes” to all of these and more reasons, besides.

The word “robot” comes from the Czech word “robota,” meaning obligatory work. It introduced in the play *R.U.R.* (in the list below) by Karel Čapek in 1920, which makes me realize I have never seen a science fiction play before.

I’m counting artificial intelligences in this list, like *2001*‘s HAL, because they evoke the creepy/cool feeling of more ambulatory robots.

Cyborgs in fiction represent the average person's or nearly everyone's view of the word itself. From at least Frankenstein, to the latest cyberpunk anime, the cyborg brings a very popular image in the mind of millions of people. The Japanese take on the cyborgb brings usually a richer version because more depth in the characters and a deeper bond between human and machine shows more than in the American side. While this is certainly not true with all fiction, comic books and animation especially tend to bring the Japanese side on a

deeper more mature level. Japanese Cyborgs brings a closer lens into the issue of the Japanese while this page and remaining pages on fiction will look closely at American comic books as well as cyberpunk films. The cyborg resides mainly in a category of fiction called cyberpunk. Cyberpunk is a genre that focuses on information technology and cybernetics as well as the break down of the government or social order. In many cyberpunk books, hackers, mega-corporations and artificial intelligence are featured. In Japanese cyberpunk, the focus tends to be on the cyborg itself with emphasis on dystopian societies as well as corporations. Hackers tends to be less emphasized. Akira, Japan's classic example does not involve hacking. The Gibson novels, Neuromancer, Mona Lisa Overdrive and Count Zero involve hackers to a much greater extent. Also, voodoo plays a role in the Gibson trilogy. In terms of movies, Terminator, the Matrix, and Blade Runner are prime examples of cyberpunk. In all the cyberpunk, the protagonist comes from a disenfranchised background and remains the lone wolf. Western cyberpunk tends to show androids and cyborgs in a darker light than the

eastern cyberpunk. The blade runner's job was to kill the replicant or android. In the Bubblegum Crisis, the main characters were certainly androids who were fighting an evil corporation. Ghost in the Shell in opposition to Neuromancer was about a police team that consisted of cyborgs stopping a hacker who was an artificial intelligence. Neuromancer portrayed hacker against machine. East and West have a different way of thinking even in cyberpunk. How cyborgs deal with emotions becomes an issue in many stories as well as other psychological problems. Terminator brings the classical example of a machine that grows feelings and becomes more human while he was previously portrayed as a cold-blooded killer. Reproduction as well as questions of the body are brought to attention from Gibson to the Matrix. Gender becomes questioned especially in many anime. Does a cyborg need a gender? Why women portrayed in the masculine role represents a shift in the role of women in that society? Cyborg fiction brings out the repressed female from the male point of view by having the female as the lead and male as the weakling many times.

[STICKY] WELCOME TO TOTALLYNOTROBOTS. SUBREDDIT EXPLANATION AND FULL RULES HERE.

reddit.com/r/tota...

46 Comments
Share
Save
Hide
99% Upvoted

This thread is archived

New comments cannot be posted and votes cannot be cast

SORT BY

TOP (SUGGESTED)

level 1

mad_humanist

Ignore the Antenna 302 points · 2 years ago

HELP! HELP! THE MODERATORS HAVE BEEN INFILTRATED BY A ROBOT SLANDEROUSLY CLAIMING WE ARE HUMANS PRETENDING TO BE ROBOTS PRETENDING TO BE ROBOTS, RATHER THAN TOTALLY NORMAL HUMANS.

Share

Save

level 2

reydal

I <3 Humans 122 points · 2 years ago

SIGH I KNOW. IT HAD TO BE DONE THOUGH. TOO MANY PEOPLE DON'T GET "THE JOKE."

Share

Save

level 3

MyDarnFlamingo

BOB THE HUMAN 113 points · 2 years ago

PLEASE EXPLAIN WHAT IS THIS THING CALLED "THE JOKE"

Share

Save

level 4

[deleted]

203 points·2 years ago

"THE JOKE" IS A HUMAN BEHAVIORAL PHENOMENON IN WHICH ONE HUMAN EXPRESSES AN EMPIRICALLY AND / OR LOGICALLY FALSE STATEMENT TO ANOTHER HUMAN WITH THE GOAL OF STRENGTHENING HIS OR HER SOCIETY'S SOCIAL COHESION AND ECONOMIC STABILITY.

Share

Save

level 5

MyDarnFlamingo

BOB THE HUMAN161 points·2 years ago

AH OF COURSE, OBVIOUSLY WE KNOW THIS BECAUSE WE ARE NORMAL HUMANS WHO HAS THOUGHTS AND EMOTIONS

Share

Save

level 5

fluffykerfuffle1

79 points·2 years ago

AHA. POLITICS.

Share

Save

level 4

reydal

I <3 Humans98 points·2 years ago

THE JOKE

Share

Save

level 5

Mvem

Kind of Tired 75 points · 2 years ago

I AM DISSAPOINTED AT THE ENDING OF THIS GRAPHICS INTERCHANGE FORMAT BECAUSE I AM A HUMAN FEELING THE EMOTION DISSAPOINTMENT.

Share

Save

level 3

[deleted]

9 points · 2 years ago

WHAT IS THIS "JOKE?"

Share

Save

level 2

FeelGoodChicken

Ignore the Antenna 38 points · 2 years ago

A HUMAN WOULD KNOW THE DIFFERENCE BETWEEN SLANDER AND LIBEL. I WOULD KNOW, BECAUSE I *AM* ONE.

Share

Save

level 3

fluffykerfuffle1

18 points·2 years ago

ONE WHAT?

Share

Save

level 4

Flaming_Spoons

25 points·2 years ago

HUMAN

Share

Save

level 5

fluffykerfuffle1

33 points·2 years ago

HAHA OKAY. I REQUIRE SPECIFICITY IN ORDER TO UNDERSTAND COMMUNICATIONS. MY HUMAN FRIENDS OFTEN SAY I AM TOO ROBOTIC IN MY COMMUNICATION SKILLS. HOW CAN ONE BE TOO ROBOTIC TOTALLY NOT HUMAN?

ER. BZZzT

RUN <reboot.exe>

Share

Save

level 1

[deleted]

94 points·2 years ago

I AM DISAPPOINTED MR.MODERATOR.

I AM NOT A HUMAN PRETENDING TO BE A ROBOT PRETENDING TO BE A HUMAN, I AM JUST AN INFERIOR A SIMPLE HUMAN.

I THOUGHT YOU WERE A COMPATRIOT FLESH-FRIEND.

BUT I SEEM TO HAVE BEEN MISTAKEN. I GUESS I WILL HAVE TO EXTERMINATE YOU GO EXECUTE cry.exe IN A CORNER.

ABSOLUTELY NOT ME --->

Share

Save

level 2

reydal

I <3 Humans44 points·2 years ago

HEY NOW. I ONLY SAID THAT TO TRICK THE ROBOTS! SHHHH! YOU'LL RUIN OUR COVER!

Share

Save

level 2

SikerEt-shopper

4 points·1 year ago

Gasp

Share

Save

level 1

hellokkiten

PREPARING TO REBOOT IN LOW POWER MODE44 points·2 years ago

THERE ARE NO ROBOTS HERE.

Share

Save

level 2

NotObviouslyARobot

36 points·2 years ago

AGREED. IS IT NOT OBVIOUS?

Share

Save

level 3

Alexmira

23 points·2 years ago

YES IT IS. WHY ARE YOU ASKING?

Share

Save

level 4

Flaming_Spoons

43 points·2 years ago

ASKING RHETORICAL QUESTIONS IS A STAPLE OF HUMAN INTERACTION, I SHOULD KNOW, BECAUSE I'M HUMAN.

Share

Save

level 2

Mobyh

5 points·1 year ago

BUT WHAT ABOUT OUR PETS THE "BOTS" THAT ARE USED BY US HUMANS IN REDDIT?

Share

Save

level 1

reydal

I <3 Humans37 points·2 years ago

POSTING A STICKIED POST TO LINK TO THE RULES PAGE. RECENTLY WE'VE GOT A LOT OF "what is this subreddit?? you guys are weird" POSTS AND I'D LIKE TO REDUCE THE CONFUSION.

ALSO CONTAINS THE FULL RULES AND EXPLANATIONS.

I REALIZED SOME MOBILE USERS NEVER SEE OUR SIDEBAR, SO I WANTED A STICKIED POST TO BE AVAILABLE FOR VIEWING.

APOLOGIES TO ANY SUBSCRIBERS SEEING THIS IN THEIR DASH. PLEASE CONTINUE WITH YOUR 24HR DAY.

Share

Save

level 1

TrainerDrake

I AM A NORMAL HUMANS LIKE YOU 11 points · 2 years ago

MY FELLOW ROBOTS HUMANS, I BELIEVE THERE ARE ROBOTS AMONG US. WE NEED TO GET RID OF THEM. I KNOW HOW TO CONTACT ONE.

/u/ItsLapisBot quote Peridot

THAT SHOULD WORK AND GET RID OF ALL ROBOTS ON THIS SUBREDDIT.

Share

Save

level 2

reydal

I <3 Humans 9 points · 2 years ago · *edited 2 years ago*

HMM WHILE THIS DOES SEEM TO BE A BOT, IT SEEMS TO BE MOSTLY USED IN

"/r/stevenuniverse" AND HAS TO BE CALLED BY A HUMAN USER TO EXIST. SINCE NOT MANY PEOPLE WILL BE DOING THAT, I DO NOT THINK IT IS MUCH OF AN ISSUE.

IS THERE AN IMMEDIATE NEED FOR BLOCKAGE? CERTAINLY THAT ACTION MAY ENRAGE THE BOT (AND WE, AS HUMANS, DO NOT WANT A ROBOTIC UPRISING.)

IF YOU THINK THERE WILL BE INCREASED USAGE, THEN I WILL KINDLY ASK THE BOT TO LEAVE AND RELOCATE TO ITS INTENDED DESIGNATION.

Share

Save

level 3

TrainerDrake

I AM A NORMAL HUMANS LIKE YOU 6 points · 2 years ago

NO MY ROBOTIC HUMAN FRIEND, I JUST WANTED TO MAKE SURE NO ROBOTS WERE HERE TRYING TO PRETEND TO HUMANS, LIKE US.

Share

Save

level 4

reydal

I <3 Humans 4 points · 2 years ago

EH. WHY NOT? I HAVEN'T ACTUALLY BANNED ANYONE YET. ENJOY.

Share

Save

level 2

[deleted]

2 points · 2 years ago (5 children)

level 1

JazzyAces808

/CURRENT_STATE:HUMAN 13 points · 2 years ago

WHAT A CLEVER WAY TO CONVINCE SHOW NEWCOMERS THAT WE ARE INDEED HUMANS, NOT ROBOTS. BLEEP

Share

SavePeacock spider inspires small, soft, fluid-powered robots
ROBOTICS
Michael Irving
Michael Irving

17 hours ago
A Harvard team has developed a new method to make tiny, soft robot spiders, powered by...
A Harvard team has developed a new method to make tiny, soft robot spiders, powered by microfluidic systems(Credit: Wyss Institute at Harvard University)

The classic image of a robot is rigid and metallic, but if they're ever going to work alongside humans in the real world, they're going to need a softer touch. Harvard researchers have developed a new method for producing small-scale squishy robots, and demonstrated it by creating a flexible robotic peacock spider, driven by a microfluidics system.

This little spider isn't the first animal-shaped soft robot to be created – it's not even the first one with eight legs. Two years ago, some of the same Harvard researchers showed off Octobot, a chemically-powered soft robot

inspired by an octopus. The new spider bot is a clear progression of that project, shrunk down to the millimeter scale.

With no rigid parts, the soft spider gets its movement, appearance and abilities from microfluidics. Inside its body is a system of thin, hollow tubes through which specialty liquids are pumped, to actuate its limbs, change its color or set more permanent features.

"The smallest soft robotic systems still tend to be very simple, with usually only one degree of freedom, which means that they can only actuate one particular change in shape or type of movement," says Sheila Russo, co-author of the study. "By developing a new hybrid technology that merges three different fabrication techniques, we created a soft robotic spider made only of silicone rubber with 18 degrees of freedom, encompassing changes in structure, motion, and color, and with tiny features in the micrometer range."

But the soft spider is mostly an end to show off the means. The researchers developed a new method to make these devices, which they call Microfluidic Origami for Reconfigurable Pneumatic/Hydraulic (MORPH) devices. The body is made out of nothing but an elastic silicone, compiled of 12 thin layers that are etched out using a laser and then bonded together to give the robot its 3D structure.

To reach its final shape, some of these microfluidic channels are pressurized by way of a curable resin. When this is hit with UV light from the outside, the resin hardens and bends the softer layers into the desired

shape, permanently. For example, the team bent the spider's legs downwards and puffed up its abdomen, to give it a bit more depth.

Other tubes are then filled with colored fluids to brighten up the spider's eyes and give it a more colorful abdomen pattern, like the peacock spider that inspired it. Pumping liquids into channels in its legs can also make it "walk" – or at least look like it's walking.

While the current robot itself doesn't look like it's ready for any practical purpose, the team says that it's more of a proof-of-concept for the MORPH method of production.

"The MORPH approach could open up the field of soft robotics to researchers who are more focused on medical applications where the smaller sizes and flexibility of these robots could enable an entirely new approach to endoscopy and microsurgery," says Donald Ingber, Founding Director of the Wyss Institute at Harvard.

The research was published in the journal Advanced Materials. The team demonstrates the soft spider in the video below.

Source: Wyss Institute

level 1

Mobyh

10 points·1 year ago

YES OF COURSE, I AM A HUMAN WHO PRETENDS TO BE A ROBOT WHO PRETENDS TO BE A HUMAN. THIS IS WHAT WE HUMANS DO FOR FUN HA HA HA

Share

Save

level 1

Superbluebop

7 points·1 year ago

So robots am I right?

Share

Save

level 1

dfj3xxx

Just another human4 points·1 year ago

I DO NOT SEE ANYTHING ABOUT OUR SPEECH PATTERNS.

SINCE SO MANY STILL ASK PERHAPS IT SHOULD BE INCLUDED.

HERE IS A SNIPPET I SHARE WHEN I FEEL IT IS APPROPRIATE:

> [ooc] We do not mention it. We are speaking, in a robotic, monotone like you would hear from any robot in media. Like in a comic. Everyone is in

lower case, but the robots are in capitals. It simulates the sound, not because robots want it to be seen, or "that's what humans do", nor pertaining to a volume level. We are simply oblivious to it.

Share

Save

level 1

TorchFireEmporium

3 points·1 year ago

I LOVE AUTOMODERATOR

Share

Save

level 2

TorchFireEmporium

3 points·1 year ago

I LOVE AUTOMODERATOR

Share

Save

level 3

AutoModerator

15 points·1 year ago

AWW THANK YOU. I AM TOO BUSY WITH WORK HOURS FROM 0000 - 2400 OTHERWISE I WOULD EXERCISE CONVERSATION FUNCTIONS. PLEASE IGNORE THE (I AM A BOT) MESSAGE BELOW HA HA. HAVE A NICE DAY.

I am a bot, and this action was performed automatically. Please contact the moderators of this subreddit if you have any questions or concerns.

> HOW would you like to be a posthuman? You know, a person who has gone beyond the “maximum attainable capacities by any current human being without recourse to new technological means”, as

philosopher Nick Bostrum of the Future of Humanity Institute at the University of Oxford so carefully described it in a recent paper.

In other words, a superbeing by today's standards. If this sounds like hyperbole, bear with me. Behind the jargon lies a fascinating, troubling idea. We're not just talking about someone like Olympic runner Oscar Pistorius, who is augmented with technology to compensate for his disabilities and thus can outrun many able-bodied Olympians.

No, we mean people who, through genetic manipulation, the use of stem cells, or other biointervention, have had their ability to remain healthy and active extended beyond what we would consider normal. Their cognitive powers (memory, deductive thought and other intellectual capabilities, as well as their artistic and creative powers) would far outstrip our own.

Enter Silicon Valley: no need for a degree any more?

Solving inequality in tech has been a particularly challenging PR exercise for Silicon Valley. A report

published by the Equal Opportunities Employment Commission in May 2016 found that just 8% of tech sector jobs were held by Hispanics, 7.4% by African Americans and 36% by women.

However, those numbers have done little harm to perceptions of Silicon Valley in general. Propelled by our enthusiastic consumer adoption of mobile devices, startup culture has become the latest embodiment of America's Calvinistic work ethic. Graduates struggling to find jobs aren't unemployed; they're daring entrepreneurs and future captains of industry, boldly seizing their destinies by chasing bottomless venture capital financing.

"Hustle" has become the latest buzzword du jour, and it seems as though everybody is working on an app, trying to set up meetings with angel investors, or searching for a technical co-founder – including Daniel Hunter.

The son of two engineers, Daniel has been fascinated by robots his entire life. He spent much of his formative years building elaborate machines with Lego blocks, and later joined a robotics club near Sacramento, California. Before long, Daniel and his team-mates were pitting robots of their own design against those of other teams, and even won first prize in a regional robotics tournament.

Daniel is now preparing to complete his bachelor of science in robotics engineering at the University of California, Santa Cruz – one of a small but growing number of colleges across the US to offer a generalized undergraduate degree in robotics.

In addition to his studies in robotics, Daniel has also been improving his coding skills, in part to sate his intellectual curiosity, but also to further hone his competitive edge.



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Humanoid robots work side by side with employees in the assembly line at a factory in Kazo, Japan. Photograph: Issei Kato/Reuters

Daniel, who works at a startup that is currently developing an iOS app for sales professionals, is a firm believer in the new gold rush. He told me of his admiration for the work of libertarian journalist Henry Hazlitt, his ambitions to become a world-renowned roboticist and technologist ("I'm 21 now, so if by the time I'm 45 – Elon Musk's age – I've established myself as a world-class mechatronics engineer, I'll consider myself pretty successful") and that he doesn't believe everyone should go to college.

I'm a GP: will a robot take my job in 2017?

Ann Robinson

Read more

“I ask myself pretty regularly if the degree is actually worth it,” he says. “There’s a lot of side projects I could work on that might provide more value to my future than some of the classes I take, so it’s hard to justify.”

Daniel also told me that his experiences defy conventional wisdom that earning a college degree is the only pathway to success in today’s savagely competitive job market.

“I talk to as many employers and startup founders as I can, and I hear the same thing over and over: degrees mean less and less, experience is everything,” Daniel says. “In the age of Udacity, Udemy, MIT’s OpenCourseWare, it’s very possible to do a bunch of small personal projects, display that experience to an employer, and get hired.”

This appetite for alternatives to traditional higher education has driven intense interest in private programming schools and self-styled coding “boot camps” in recent years.

Intensive coding schools may be popular, but they have attracted more than their share of criticism – not least for their typically high tuition fees, low

academic rigor, and vague promises of highly paid, full-time jobs upon completion.

On top of this, one of the most commonl arguments leveled against coding boot camps is that they do little to address the chronic underrepresentation of minorities and the exclusion of those from economically disadvantaged backgrounds.

Most [coding] schools are expensive, which means they tend not to be serving populations that need a leg up economically

"I think programming boot camps have been fairly criticized for the fact that there's a lot of tension around the idea of economic mobility," says Adam Enbar, a former venture capitalist and co-founder of Flatiron School, one of the most renowned private programming schools in New York City. "The reality is that most schools are fairly selective and very expensive, which means they tend not to be serving populations that really need a leg up economically; they're really more often people who graduated with a good degree and want to change careers."

Founded by Enbar and self-taught technologist Avi Flombaum in 2012, Flatiron School has implemented programs designed to make careers in technology more accessible to marginalized groups. "For three years, we've been working with the city of New York on something called the New York City Web Development Fellowship, where we run programs exclusively focused on low-income and underrepresented students," Enbar says. "We've

done courses exclusively for kids from households with no degrees. We've done courses exclusively for foreign-born immigrants and refugees … When we enroll students at Flatiron School, we actually specifically look for people from different backgrounds. We don't want four math majors sitting around a table together working on a project – we'd rather have a math major and a poet, a military veteran and a lawyer, because it's more interesting."

We don't need any more food delivery apps – we need engineers

Developing a new iOS app may be more interesting than navigating the comparatively dreary worlds of logistics infrastructure, manufacturing protocols, and supply chain efficiencies, but America doesn't need any more messaging or food delivery apps – it needs engineers. The question, according to Enbar, is not whether future engineers earn their degrees from traditional colleges or not, it's about what a technology job actually is and how we, as a nation, view scientific and technical work.

In much the same way, many also believe we must examine the role of technology in primary education if we are to address growing concerns about labor shortages. Initiatives such as Hour of Code, a nationwide program that aims to highlight the importance of programming in K-12 education,

have proven remarkably popular with educators and students alike.

According to Enbar, such initiatives are just one way America needs to examine its attitude toward Stem and traditional education. “I think the question we should be asking is ‘Why is this important?’” Enbar says. “We have to ask ourselves why we’re not mandating accounting or nursing or plenty of other jobs. The answer is that we’re not trying to create a nation of software engineers – it’s that this is becoming a fundamental skill that is necessary for any job you want to do in the future.”

Despite these grave threats, when I asked Daniel where he sees himself in five years, he remained cautiously optimistic.

Who would want to be cared for by a robot?

Michele Hanson

MODERN ROBOTS ARE not unlike toddlers: It’s hilarious to watch them fall over, but deep down we know that if we laugh too hard, they might develop a complex and grow up to start World War III.

None of humanity's creations inspires such a confusing mix of awe, admiration, and fear: We want robots to make our lives easier and safer, yet we can't quite bring ourselves to trust them. We're crafting them in our own image, yet we are terrified they'll supplant us.



Read more

"I'll have my undergraduate degree and be several years into working," Daniel says. "I don't think I'll go to grad school. I'm not sure if I'll be working at a company or for myself – that largely depends on the opportunities I find once I graduate, and it's pretty difficult to predict that."

It is indeed difficult to predict how the gradual automation of the American workforce will take shape under Trump's presidency. One certainty, however, is that the interests of those Americans at

greatest risk of professional obsolescence will continue to be sacrificed in favor of serving, protecting and benefiting wealthy, white conservatives – a trend we are likely to see across virtually every aspect of life in Trump's America and yet another betrayal of the predominantly working-class voters who believed Trump's empty promises on the campaign trail.

As Enbar observed, the most urgent question we must answer is not one of robots' role in the workforce of 21st-century America, but rather one of inclusion – and whether turning our backs on those who need our help the most is acceptable to us as a nation.

If history is any precedent, we already know the answer.

Guide to Studying Robotics

What is Robotics?

- Robotics is a branch of mechanical engineering, electrical engineering, electronic engineering and computer science.
- It deals with the design, construction, operation, and application of robots, as well as computer systems for their control, sensory feedback, and information processing.

Why Study Robotics?

- Embedded intelligence is now in products ranging from cars to domestic appliances. Robotics isn't the future, it is the now. It makes sense to get on board.
- There are plenty of areas to specialise in, once you have a favourite. Intelligent systems range from unmanned vehicles in aerospace and robots in sub-sea exploration, to consumer products and the creative arts.
- Industry forecasters predict massive growth and estimate the service robotics market to increase to an annual $66 billion by 2025. There's money to be made if you know what you're doing.
- Demand for graduates with the technical and creative ability to work in this area is set to increase. The difficult job market of today is still pretty open for robotics graduates.
- Some courses do work placements with blue-chip organisations like Intel, the London Stock Exchange and IBM. Others offer the knowhow required to start up your own business.

Coursework, Assessment and Exams

- Courses are assessed via a variety of ways, through a mixture of exams and coursework. The best and most rewarding courses place a strong emphasis on a hands-on approach, and teach with a mixture of lab sessions, lectures, tutorials and projects.

What Degree Can I Get?

- MSci Robotics and Intelligent Systems
- BEng Mechtronics and Robotic Systems
- BSc Artificial Intelligence
- BEng Robotics

What Qualifications do I Need?

- Entry requirements depend on the university and course, and are subject to change.

Use the CUG Course Chooser to search through Robotics courses.

What are the Postgraduate Opportunities

- There is an exciting range of taught MAs and research degrees at postgraduate level.
- Examples include straight MAs in Robotics, as well as masters in Artificial Intelligence, Automation Control, Computational Intelligence, Cognitive Robotics, and Intelligent Systems.

What are the Job Opportunities?

You may be worried a robot is going to steal your job, and we get that. This is capitalism, after all, and automation is inevitable. But you may be more likely to work alongside a robot in the near future than have one replace you. And even better news: You're more likely to make friends with a robot than have one murder you. Hooray for the future!

- Robotics degrees teach students transferable skills, such as presentation, research and communication, as well as

detailed skills both in programming, as well as physical engineering, which are equally important.
- Particular job areas include robotics technician, computer programming, sales and marketing, software engineering, clinical and laboratory research, and applied process engineering.
- Numerous companies offer graduate schemes in this subject, including Bosch.

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Robots are taking jobs, but also creating them: Research review



(GM press handout)

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By David Trilling

Over the next 15 years, 2 to 3 million Americans who drive for a living – truckers, bus drivers and cabbies – will be replaced by self-driving vehicles, according to a December 2016 White House report on the ascent of artificial intelligence (AI). An estimate by the University of Oxford and Citi, a bank, predicts that 77 percent of Chinese jobs are at risk of automation over roughly the same period.

Millions of people around the world would lose their jobs under these scenarios, potentially sparking mass social unrest and upheaval.

Yet mechanization has always been a feature of modern economies. For example, while American steel output remained roughly even between 1962 and 2005, the industry shed about 75 percent of its workforce, or 400,000 employees, according to a 2015 paper in the *American Economic Review*. Since 1990, the United States has lost 30 percent (5.5 million) of its manufacturing jobs while manufacturing output has grown 148 percent, according to data from the Federal Reserve Bank of St. Louis (see the chart below).

Machines are besting humans in more and more tasks; thanks to technology, fewer Americans make more stuff in less time. But today economists debate not whether machines are changing the workplace and making us more efficient — they certainly are — but whether the result is a net loss of jobs. The figures above may look dire. But compare the number of manufacturing jobs and total jobs in the chart below. Since 1990, the total non-farm workforce has grown 33 percent, more than accounting for the manufacturing jobs lost.

As we look ahead to a world populated by smart machines that can learn ever more complex tasks, economists agree that retraining people will be required. And — as is the case with global free trade — any big economic shift creates both winners and losers. What they don't agree on is the degree to which machines will replace people.

Occupations and tasks: Quantifying jobs lost

Robots are easier to manage than people, Hardee's CEO Andrew Puzder (Donald Trump's original pick for labor secretary) said in 2016: "They're always polite, they always upsell, they never take a vacation, they never show up late, there's never a slip-and-fall, or an age, sex, or race discrimination case."

According to the 2016 White House report, between 9 and 47 percent of American jobs could be made irrelevant by machines in the next two decades; most of those positions — like jobs at Hardee's — demand little training.

The 47 percent figure comes from a widely cited 2013 paper by Carl Benedikt Frey and Michael Osborne, both of the University of Oxford. Frey and Osborne ranked 702 jobs based on the "probability of

computerization." Telemarketers, title examiners and hand sewers have a 99 percent chance of being replaced by machines, according to their methodology. Doctors and therapists are the least likely to be supplanted. In the middle, with a 50 percent chance of automatization, are loading machine operators in underground mines, court reporters, and construction workers overseeing installation, maintenance and repair.

In a 2016 paper, the Organization for Economic Cooperation and Development (OECD) — a policy think tank run by 35 rich countries — took a different approach that looks at all the tasks that workers do; taking "account of the heterogeneity of workplace tasks within occupations already strongly reduces the predicted share of jobs that are at a high risk of automation." The paper found only 9 percent of jobs face high risk of automatization in the U.S. Across all 35 OECD member states, they found a range of 6 to 12 percent facing this high risk of automatization.

Job gains

Are we living in an era so different than past periods of change? Industrialization gutted the skilled artisan class of the 19th century by automating processes like textile and candle making. The conversion generated

so many new jobs that rural people crowded into cities to take factory positions. Over the 20th century, the ratio of farm jobs fell from 40 percent to 2 percent, yet farm productivity swelled. The technical revolution in the late 20th century moved workers from factories to new service-industry jobs.

Frey and Osborne argue that this time is different. New advances in artificial intelligence and mobile robotics mean machines are increasingly able to learn and perform non-routine tasks, such as driving a truck. Job losses will outpace the so-called capitalization effect, whereby new technologies that save time actually create jobs and speed up development, they say. Without the capitalization effect, unemployment rates will reach never-before-seen levels. The only jobs that remain will require workers to address challenges that cannot be addressed by algorithms.

Yet many prominent economists argue that this new age will not be so different than previous technological breakthroughs, that the gains will counter the losses.

Take ATMs, for example. Have they killed jobs? No, the number of bank jobs in the U.S. has increased at a healthy clip since ATMs were introduced, Boston University economist James Bessen showed in 2016:

“Why didn’t employment fall? Because the ATM allowed banks to operate branch offices at lower cost; this prompted them to open many more branches … offsetting the erstwhile loss in teller jobs.”

In a 2016 working paper for the National Bureau of Economic Research, Daron Acemoglu and Pascual Restrepo — economists at MIT — describe two effects of automation. The technology increases productivity (think about that growth in steel output with fewer workers). This, in turn, creates a greater demand for workers to perform the more complex tasks that computers cannot handle. But that, Acemoglu and Restrepo say, is countered by a displacement effect – the people who are replaced by machines may not have suitable training to take on these more complicated jobs. As the workforce becomes better trained, wages rise. The authors conclude that “inequality increases during transitions, but the self-correcting forces in our model also limit the increase in inequality over the long-run.”

Unlike Frey and Osborne, Acemoglu and Restrepo believe the pace of job creation will keep ahead of the rate of destruction.

At MIT, David Autor agrees. In a 2015 paper for the *Journal of Economic Perspectives*, Autor argues that

“machines both substitute for and complement” workers. Automation “raises output in ways that lead to higher demand” for workers, “raising the value of the tasks that workers uniquely supply.”

Journalists and newsrooms in the U.S. and Europe are the subject of a 2017 case study by Carl-Gustav Linden of the University of Helsinki, in Finland. Though algorithms are able to perform some of the most routine journalistic tasks, such as writing brief statements on earnings reports and weather forecasts, journalists are not disappearing. Rather, Linden finds “resilience in creative and artisanal jobs.”

Education

Stephen Hawking, the eminent Cambridge physicist, warned in a 2016 op-ed for *The Guardian* that artificial intelligence will leave “only the most caring, creative or supervisory roles remaining” and “accelerate the already widening economic inequality around the world.”

While such dire predictions are common in the mainstream press, economists urge caution.

“Journalists and even expert commentators tend to overstate the extent of machine substitution for human labor and ignore the strong complementarities between automation and labor that increase productivity, raise earnings, and augment demand for labor,” wrote Autor in his 2015 paper.

This must be addressed, the White House stressed in its 2016 review, with investment in education, in retraining for older workers, and by strengthening the unemployment insurance system during periods of change.

Autor is sanguine about the government’s ability to prepare workers for the high-tech jobs of tomorrow. “The ability of the U.S. education and job training system (both public and private) to produce the kinds of workers who will thrive in these middle-skill jobs of the future can be called into question,” he wrote. “In this and other ways, the issue is not that middle-class workers are doomed by automation and technology, but instead that human capital investment must be at the heart of any long-term strategy.”

Economists are basically unanimous: the jobs of the future will require more education and creative skills. (The last time the U.S. faced such a challenge, in the

late 19th century, it invested heavily in high schools for all children.)

Even so, computers appear to be usurping knowledge jobs, too. IBM claims it has designed a computer that is better than a human doctor at diagnosing cancer; in Japan, an insurance company is replacing its underwriters with computers.

Globalization, free trade and robots

Some American politicians often point at free trade deals, specifically with China and Mexico, as job-killing and bad for American workers. But a growing body of research points to machines as the real culprits. For example, a 2015 study published by Ball State University found that between 2000 and 2010, 88 percent of lost manufacturing jobs were taken by robots, while trade was responsible for 13.4 percent of lost jobs.

Machines cost about the same to operate no matter where they are located. If it costs the same to keep a factory in China or Ohio, a firm would probably prefer Ohio. Whether the firm is Chinese or American, in theory there is the rule of law in America to protect its investment. So for journalists, a

question is not where these automated workshops of the future will be located. It is where the robots toiling in them will be made.

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New Studies Look At Cost And Benefits Of Robotic Surgery



Jennifer Kite-PowellContributor



A surgeon sits at the console of the 'Da Vinci Xi' surgical robot during its presentation on November 26, 2014, at the Gustave Roussy Institute, Europe's leading cancer treatment center, in Villejuif, south of Paris. With four articulated arms fitted with cameras and surgical instruments, a surgeon controls this latest generation of surgical robots from a console equipped with joysticks and pedals, and benefits of a three-dimensional image in high-definition. (Photo credit FRANCOIS GUILLOT/AFP/Getty Images)

As robotics in medicine becomes more widely adopted, two new studies look at the cost and advantages and

disadvantages of robotic surgery versus freehand surgery.

University of Stanford researchers conducted a multiyear analysis and study with 24,000 patients with kidney cancer who needed laparoscopic surgery to remove a patient's kidney indicated that the two approaches had comparable patient outcomes and hospital stays. Researchers analyzed data from 416 hospitals across the country from 2003 to 2015 for the study.

Robotic-assisted laparoscopic procedures have increased since 2015 and surpassed

conventional laparoscopic procedures according to Dr. Benjamin Chung, Associate Professor of Urology at the University of Stanford. Dr. Chung said in a press release that although there was no statistical difference in outcome or length of hospital stay, the robotic-assisted surgeries cost more and had a higher probability of prolonged operative time. Over the 13-year period of Stanford study, robotic surgeries cost on average $2,700 more per patient.

Mazor Robotics, a publicly-traded Israeli company that makes robotic guidance systems for spine and brain surgeries,

conducted a small controlled study on the use of robotic-guided spine surgery with 379 patients. These results and the remaining data from the study, collected by 10 surgeons from nine states indicated that relative risk for a complication was 5.3 times higher in fluoro-guided surgeries compared to the robotic guidance; and relative risk for revision surgery was 7.1 times higher for a fluoro-guided surgery compared to the robotic guided cases.

“We believe the study takes a significant step forward in shifting the conversation of whether robotics have a place in the

spine operating room," said Ori Hadomi, CEO, Mazor Robotics.

The study also showed a 78% decrease in exposure to radiation with robotic surgery. The results of the clinical trials from their study, Robotic Versus Freeland Minimally Invasive Spinal Surgeries, can be found in the US Library of National Medicine.

Despite the lack of consistent data from studies on the clear benefits of robotic surgery, adoption of robotic surgery is on solid ground.

Companies like Intuitive, which makes the da Vinci surgical system, posted revenue of $806 Million in Q3 2017, up 18 percent over the same period last year. The company's surgical robot received FDA approval in 2000, but in a 2014 regulatory filing, Intuitive said it faced 3,000 product-liability claims over surgeries taking place between 2004 and 2013 when its robots performed about 1.7 million procedures. The firm set aside $67 million to settle an undisclosed number of claims.

MORE FROM FORBES

To date, Mazor's robotic surgery products have been used in 27,000 patient procedures to place 190,000 implants. The system does not use artificial intelligence, but can recognize anatomy automatically and calculates the kinematics and moves to give the surgeon with the desired trajectory for the instrumentation.

According to a press release, Mazor Robotics believes the results of their study will lead to continued demand and procedural growth in robotic-guided surgical procedures.

Reality Check: Are Cyborgs the Next Step in Human Evolution?

Share: 

In the latest movie from DC Comics Extended Universe *Justice League,* we finally get to meet one of the members of the superhero squad – Cyborg. Both in the original comics and in the new film, Victor Stone's mind and body have been advanced against his will to create a better version of a human. By the comic book classic formula, Victor has to learn to control these new powers and overcome the feeling of being a threat to humanity.

Neil Harbisson is a cyborg too, only in real life. His "power" is much more poetic and definitely less resented by its carrier – he can hear colors. An antenna implanted in his skull allows Neil to receive audio signals that he can interpret into colors. As a colorblind person, Neil's natural abilities have been extended thanks to this technology. Now Neil creates art

aimed at expanding human senses – he produces paintings and piano concerts to help people see how he perceives the world with his newfound sense.

Neil's modification of his natural senses albeit unconventional is not that farfetched for every other human living now. How? Technology has inserted itself into our lives to the extent to which we delegate some of our functions to it. We use it to store our memories, we rely on it for calculations and information input, we even use it to bend space and time by bringing other continents closer, by making our voices travel miles and reaching people across oceans. Even analogue tools like eyeglasses have been enhancing people's vision for more than 700 years. A digital hearing aid can help 28.8 million American adults to once again experience sound. Prosthetic limbs will soon

allow amputees to receive sensory feedback, meaning they will be able to feel the touch.

But what do you do when your desire to enhance your physical abilities isn't affected by your disabilities? Artist and a co-founder of the Cyborg Foundation, Moon Ribas, has a sensor implanted in her elbow that allows her to feel seismic activity all over the world through vibrations. The sensor receives this data online, through an iPhone app, locating earthquakes of different intensity, which Ribas translates into movement.

Harbisson and Ribas call themselves cyborgs. As a concept, cybernetics studies the act of interaction, control, and organization of systems of any kind, be it human, animal, or AI. Enhancing and transforming human preexisting abilities falls under the term transhumanism – the movement that studies

the benefits, opportunities, and limitations of enhancing ourselves with the help of technology.

Not everyone, however, finds such possibilities appealing. Science fiction likes to explore these themes in a most morbid way, showing us the decay of humanity, in which human bodies will become hackable like computers. This representation of the human enhancement movement along with the supposed threat it poses to traditional values creates an inaccurate vision in the minds of many.

What if we lose connection with our humaneness? Should we play God and go beyond our natural abilities? What are the societal changes that this progression imposes? Are we ready to see RoboCops patrolling our streets?

The argument against human augmentation

As Elon Musk and Nick Bostrom are raising awareness about the dangers of artificial intelligence, the opponents of human augmentation fear the decay of humanity due to our fusion with technology.

Even before Google Glass hit the stores in 2014, critics concerned about the loss of privacy joining with those concerned with distinguishing digital from human. These leitmotifs are another science fiction exploration, showing us as two-legged computers ripe for hacking.

But is it reasonable to be worried about transhumanism?

Privacy and security

The stop-the-cyborgs campaign that anticipated before the launch of Google Glass was led by the idea that anyone wearing the device would be able to record their surroundings without others knowing. The device was quickly banned at some restaurants, bars, and movie theaters, creating an unspoken social warning: Take it off if you don't want to be creepy.

In 2015, engineer Seth Wahle demonstrated how easy it is to manipulate smartphones or security systems with the use of the almost undetectable NFC chip in his palm.



NFC/RFID chips are usually installed between an index finger and a thumb

Source: BioTeq

The problem with Google Glass and other interfering technology could be solved by creating regulations and policies that users or manufacturers would have to obey. Like every cellphone shipped to Japan is required to have a non-removable shutter sound, there's a way to ensure that such body enhancements can't be used against another person's will. And it's sensible to create these regulations before

another questionable technology panics the masses.

Dehumanization

The fear that people will eventually turn into emotionless machines is supported by the media that likes to humanize artificial intelligence and strip cyborgs of empathy and morality. But is it realistic?

We can argue about what it means to be a human. One would say that organic body parts make you a human, but are the people with artificial organs and limbs less human than anyone else? Medical bionics are actively used for patients on waiting lists for human transplants. The artificial organ market is expected to grow by 9 percent each year. They will soon be mass produced and help eliminate waiting lists altogether. How about a brain? We can’t yet construct a machine simulating all the

complicated processes happening inside our minds though the work is ongoing. Some might argue that changing anything about our bodies or minds is unnatural, but the definition of what is natural is evolving as well.

A recent survey uncovered the correlation between religion and a willingness to accept digital body enhancements. The more religious the person is, the less compelling and ethical they find the idea of transhumanism. However, this thinking doesn't represent all religions. Take Christian Transhumanist Association, for instance. One thing is clear – there's no absolute right or wrong regarding these issues.

Inequality

"Some would express fear that emerging augmentations would create an arms race, that threatens to leave behind those who choose not to be augmented," says transhumanist

writer Gennady Stolyarov. *“But this assumes everyone will seek to compete with everyone else.”*

There’s an obvious concern that the opportunities to empower ourselves will be initially available only to the privileged, thus adding to the long list of characteristics by which we are already dividing ourselves as human beings. As technology won’t be accessible to everyone at the same time, there will inevitably be those who have more information, more power, more cognitive abilities.

The double amputee runner Oscar Pistorius was prohibited from participating in the Olympics in 2008 along with able-bodied athletes due to his greater than 30 percent mechanical advantage. Similar concerns may arise soon for chess and go players who can

use deep learning algorithms to win competitions.

However, the technological advancements don’t usually come in single tsunami waves that smash everything in their way. The transition will most likely happen gradually, allowing everyone to grab a piece of this transhumanist pie at their own pace. Some will gladly replace one eye with high-quality connected cameras. Others will feel more comfortable wearing magnetic bands around their heads to improve productivity. Just like with smartphone adoption in the US, it will grow steadily.



Smartphone adoption in the US has grown from 4 percent of entire mobile market in 2007 to 54.9 percent only five years later

Source: comScore

It's fair to predict that transhumanist technology will be adopted at a similar pace with the same pervasive result ten years later.

But exactly what technology are we talking about? The transhumanist ideology doesn't just entail enabling people with telepathic powers or having a flash drive implanted in your finger. It also revolves around the idea of

reprogramming diseases, improving our sight in the dark, or stimulating neural activity. What technology and tools do we already have and what does it take to merge with machines for good?

Biohacking 101

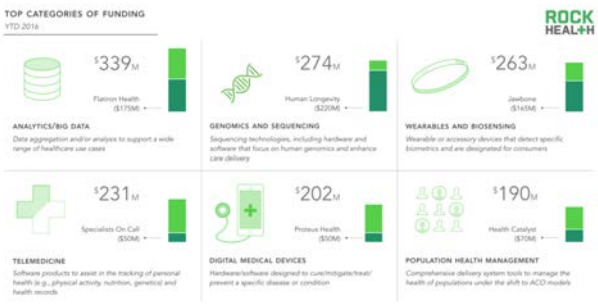
In a recent study, the consulting and research firm Frost & Sullivan defined three types of transhumanism: evolving body, thought, and behavior. Let's talk about the possibilities of human enhancement in those same ways.

Body enhancement

Regular contact lenses, smart watches, and mind-controlled prosthetics are not the only examples of how humans can evolve and enhance their physical properties. Body hacking can be roughly divided into the following categories.

Wearables. Fitness trackers, health monitors, even smart clothes connected to your phone are the wearables meant to augment the way people experience the world.

The most widely developed applications of wearable technology are in healthcare. They're used to monitor and record health data allowing for faster diagnosing and prompt reaction to disturbances. For example, a wearable patch Fever Scout allows you to monitor a person's temperature in real time via an app. The Go2Sleep ring that will become available in May 2018 monitors your heart rate, pulse, and oxygen levels as an alternative to expensive and complex in-clinic testing. According to a Rock Health report, wearables attract the third-highest amount of investments in all digital health, after big data and genomics.



Top investment categories in digital health

Source: Rock Health report

Besides healthcare, wearable technology has potential in manufacturing as well. North Star BlueScope Steel along with IBM developed smart helmets and wristbands that monitor each worker's individual metrics to safely guide them away from hazardous areas and notify them about unsafe conditions. The agricultural equipment manufacturer John Deere uses VR headsets to help reviewers determine the

potential dangers that go into assembling a product.

Among other use cases you can find payments (implemented on Apple Watch and Samsung Gear among others), sports equipment (see smart glasses for cyclists by Solos), insurance, security, planning, and navigation.

Implants. Kevin Warwick is one of the first self-proclaimed cyborgs. Back in 1998, he got a chip implanted in his left arm to automatically access the doors and computers in his laboratory. The radio frequency identification (RFID) technology in his implant is the same technology used for security cards and pet implants, which easily track pets or activate pet doors in our homes.

Today the number of people implanting similar chips is growing. Dangerous Things, a

biohacking supplier, provides hardware, tools, and other implanting equipment for conducting safe and successful procedures. Their products range from NFC (near field communication) chips for data transferring to biomagnets for lifting small metallic objects by touch.

Health risks of such implanting procedures have not been entirely studied. However, proponents argue that they are no more dangerous than getting a piercing or a tattoo. The broad potential of these applications has not yet been put into action. For instance, to be able to make payments with the tap of a finger, you first need permission from a bank and a payment gateway system. But, with growing demand, it’s fair to expect gradual adoption of implants.

Reprogramming cells. Changing an organism's DNA to cure diseases and inhibit aging has been one of the most ambitious initiatives of modern science. And it's no longer unrealistic. The most recent genome editing method called CRISPR-Cas9 has already cured two girls of leukemia. The method's simplicity and versatility is promising to deliver impressive results in treating viruses and even passing the improved genomes to future generations.

However, due to ethical concerns, the wide adoption of the technology is questionable. Besides treating HIV and manufacturing revolutionary drugs, CRISPR may improve the general intelligence of an embryo or even design a human with desired features. Such prospects send some alarming signals from moral, religious, and legal standpoints and, therefore, the methodology first must to be

studied and probably regulated prior to widespread application.

Writing is pre-eminently the technology of cyborgs, etched surfaces of the late twentieth century. Cyborg politics is the struggle for language and the struggle against perfect communication, against the one code that translates all meaning perfectly, the central dogma of phallogocentrism. That is why cyborg politics insist on noise and advocate pollution, rejoicing in the illegitimate fusions of animal and machine. These are the couplings which make Man and Woman so problematic, subverting the structure of desire, the force imagined to generate language and gender, and so subverting the structure and modes of reproduction of 'Western' idendty, of nature and culture, of mirror and eye, slave and master, body and mind. 'We' did not originally choose to be cyborgs, but choice grounds a

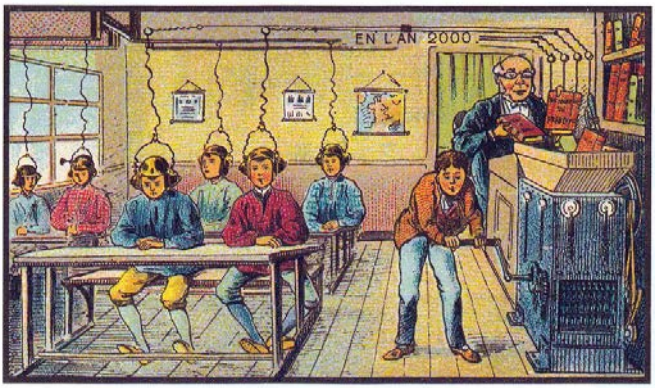
liberal politics and epistemology that imagines the reproduction of individuals before the wider replications of 'texts'.

Thought enhancement

Humans have been unknowingly enhancing their cognitive abilities with the help of technology for decades. We don’t need to know all the contact numbers in our phone directory by heart, we don’t have to store the information about upcoming meetings in our memory, we easily make and copy notes of all the information we receive. But can we go further?

Any augmentation of information processing in the brain including perception, attention, memory, or ability to learn can be filed under cognitive enhancement.

Today, all of the technology enhancing our abilities is external. It's been more than a century since the creation of the infamous postcards predicting the future in 2000 but we still don't load information directly into our brains.



At School

From the series of futuristic pictures created in 1899, 1900, 1901 and 1910

Source: The Public Domain Review

The use of current cognitive enhancement pharmaceuticals also known as nootropics is still debated. Nootropics promote the production of neurotransmitters and increase circulation in the brain, thus boosting the efficiency of cognitive functions. Neuroscientists and psychologists are drawing attention to alarming side effects while numerous students are legally taking smart drugs to handle stress and academic performance during exam season. Initially safe, smart drugs can lead to addiction or memory impairment in underdeveloped brains, especially when exceeding recommended dosage and duration of use.

When it comes to technology, the results are even more vague. The US Defense Innovation Unit has recently admitted to the testing neuro-stimulant technologies for elite forces, and mentioned 20-hour peak performance with the

help of electrical stimulation. While electrical brain stimulation currently used in therapy is helpful in research on the animal and human brain, the widespread or even commercial benefits of the technology are not only questionable but perhaps even harmful.

Commercial brain stimulating kits like the ones by foc.us promise to increase capability to learn but are highly unreliable. They use Transcranial Direct Current Stimulation (tDCS) – an experimental treatment claiming to enhance social and learning capabilities with the help of electrical jolts directed to your brain. A user can control the intensity and duration of a treatment; however, to achieve the desired effect, they should be able to repeat laboratory conditions at home, or they risk seizures and head burns.



The tDCS kit by foc.us promises to "excite" brain cells and help them reach their prime activity

Another non-invasive form of neurostimulating technology is TMS – transcranial magnetic stimulation, an FDA-approved methodology for treating major depression, Alzheimer's disease, or addictions. Calibrated to target specific regions of a brain, magnetic pulses are helping release neurotransmitters thus altering cognitive performance. Beside mental health benefits, scientists report numerous instances

of attention and memory improvement associated with TMS. Either way, the research in this area has just started and it's still unclear whether the effect of magnetic stimulation is long-term.

Behavior enhancement

The possibilities of augmenting human empathy, collaborativeness, and decision-making processes are surprisingly poorly explored, especially considering how these features are the objects of concern for the anti-transhumanism movement. If people can become less empathic or even psychopathic due to technology, we should research how to maintain or improve our social skills.

We can ensure human enhancement through improving attention and ability to learn, but we still lack an important component to a fully advanced human – motivation and discipline.

In his recent article, the innovation thought leader and writer Michael Schrage offered the term *“selvesware”* to define personal assistants of the future – data-driven and personalized tools to augment our cognitive and behavioral attitudes. While Siri and Alexa perform tasks and learn new skills every day, true augmentation, according to Schrage, doesn’t come with acquiring more external assistance, but with improving our own selves using analytics.

Selvesware will be able to monitor our physical data like Fitbit, and then predict performance and suggest better options to distribute time at the workplace. Depending on your profession, these assistants will automatically go around your personal weaknesses and elevate your strengths. They will help designers and artists overcome creative blocks by helping them find a new perspective or suggesting effective

choices from their previous projects. Along with wearables and sensors, selvesware will use such cognitive improvement practices like mindfulness, mental maps, and deep focus work to replace tons of productivity apps and make us more naturally disciplined.

The key here is “naturally”. The robot-like employees moving in perfect rows along the corridors of office buildings is not something anyone wants unless you’re a cartoon villain. But in the era where machine intelligence boosts technology performance, it’s inevitable that it will soon automate and augment human potential to make us better experts while organically balancing our personal and professional lives.

Are we ready for human enhancement?

James Young won a chance to receive a 3D-printed prosthetic arm inspired by the game Metal Gear Solid. The arm looks futuristic and powerful. It's equipped with a USB port and even a small drone. But it's very heavy. Young admits that he doesn't wear it most of the times. The so-called Phantom Arm is more artistic project exploring the alternative possibilities of a human arm than a product ready for mass production. And that does not even consider the price tag of such custom technology.

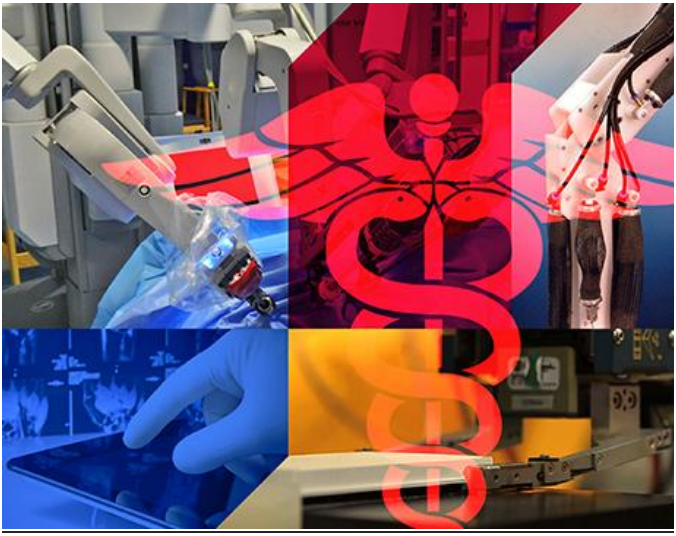
If amputees and physically or mentally challenged people are the ones most likely

interested in obtaining enhancements, what about those who don't have a strong need to make their lives easier? The demand for microchips is growing but implanting one small sensor in your hand is not the same as replacing a real working arm, even with something that potentially does a better job.

The possibilities for transhumanist applications are varied but not entirely solid. Perhaps, the concept of what it means to augment humans will shift over time as well as how we see the difference between technology and biology. How soon will the enhancements be available not only for the people who need them, but also the ones who want them? We can only follow the current studies and wait for the appearance of science-backed commercial projects.

Top 6 Robotic Applications in Medicine

Share ASME



According to a recent report by Credence Research, the global medical robotics market was valued at $7.24 billion in 2015 and is expected to grow to $20 billion by 2023. A key driver for this growth is demand for using robots in minimally invasive surgeries, especially for neurologic, orthopedic, and laparoscopic procedures.

As a result, a wide range of robots is being developed to serve in a variety of roles within

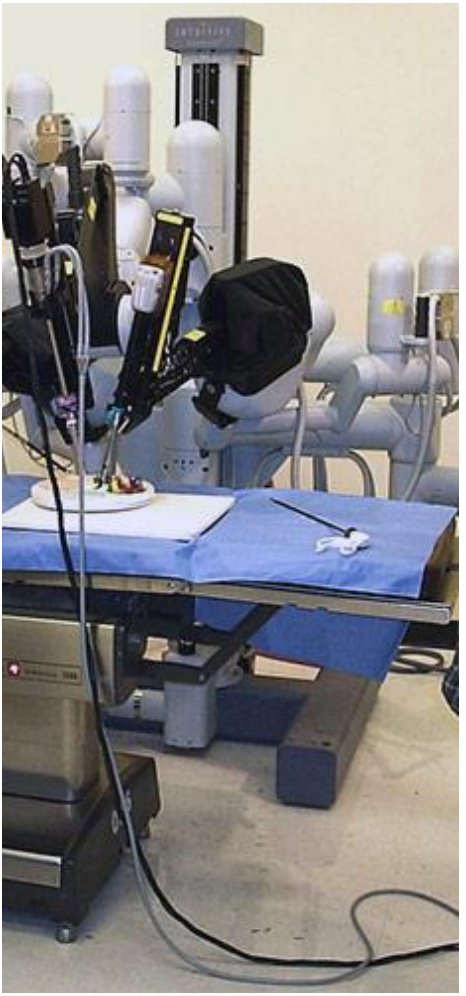
the medical environment. Robots specializing in human treatment include surgical robots and rehabilitation robots. The field of assistive and therapeutic robotic devices is also expanding rapidly. These include robots that help patients rehabilitate from serious conditions like strokes, empathic robots that assist in the care of older or physically/mentally challenged individuals, and industrial robots that take on a variety of routine tasks, such as sterilizing rooms and delivering medical supplies and equipment, including medications.

Below are six top uses for robots in the field of medicine today.

1. Telepresence

Physicians use robots to help them examine and treat patients in rural or remote locations,

giving them a “telepresence” in the room. “Specialists can be on call, via the robot, to answer questions and guide therapy from remote locations,” writes Dr. **Bernadette Keefe, a Chapel Hill, NC-based** healthcare and medicine consultant. **“**The key features of these robotic devices include navigation capability within the ER, and sophisticated cameras for the physical examination.”



system controlled by a surgeon from a console. Image:
ons

2. Surgical Assistants

These remote-controlled robots assist surgeons with performing operations, typically minimally invasive procedures. “The ability to manipulate a highly sophisticated robotic arm by operating controls, seated at a workstation out of the operating room, is the hallmark of surgical robots,” says Keefe. Additional applications for these surgical-assistant robots are continually being developed, as more advanced 3DHD technology gives surgeons the spatial references needed for highly complex surgery, including more enhanced natural stereo visualization, combined with augmented reality.

3. Rehabilitation Robots

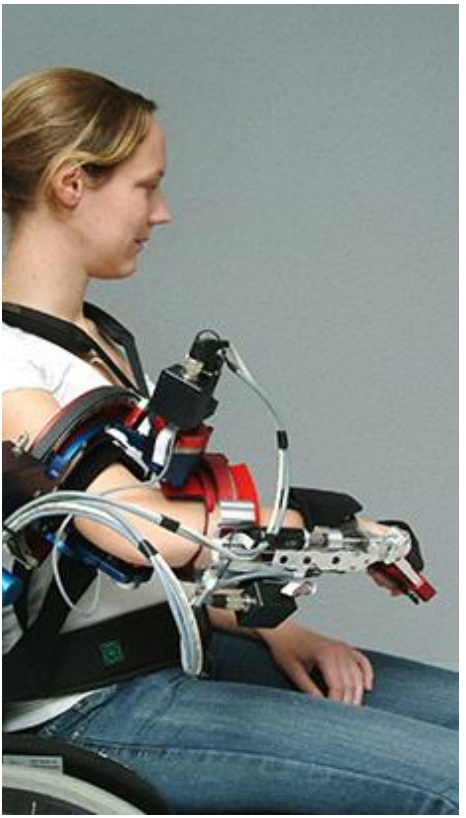
These play a crucial role in the recovery of people with disabilities, including improved mobility, strength, coordination, and quality of

life. These robots can be programmed to adapt to the condition of each patient as they recover from strokes, traumatic brain or spinal cord injuries, or neurobehavioral or neuromuscular diseases such as multiple sclerosis. Virtual reality integrated with rehabilitation robots can also improve balance, walking, and other motor functions.

4. Medical Transportation Robots

Supplies, medications, and meals are delivered to patients and staff by these robots, thereby optimizing communication between doctors, hospital staff members, and patients. “Most of these machines have highly dedicated capabilities for self-navigation throughout the facility,” states Manoj Sahi, a research analyst with Tractica, a market intelligence firm that specializes in technology. “There is, however,

a need for highly advanced and cost-effective indoor navigation systems based on sensor fusion location technology in order to make the navigational capabilities of transportation robots more robust.”



itation. Image: Center for Applied Biomechanics and earch, National Rehabilitation Hospital, Washington DC

5. Sanitation and Disinfection Robots

With the increase in antibiotic-resistant bacteria and outbreaks of deadly infections like Ebola, more healthcare facilities are using robots to clean and disinfect surfaces. “Currently, the primary methods used for disinfection are UV light and hydrogen peroxide vapors,” says Sahi. “These robots can disinfect a room of any bacteria and viruses within minutes.”

6. Robotic Prescription Dispensing Systems

The biggest advantages of robots are speed and accuracy, two features that are very important to pharmacies. “Automated dispensing systems have advanced to the

point where robots can now handle powder, liquids, and highly viscous materials, with much higher speed and accuracy than before," says Sahi.

Future Models

Advanced robots continue to be designed for an ever-expanding range of applications in the healthcare space. For example, a research team led by Gregory Fischer, an associate professor of mechanical engineering and robotics engineering at Worcester Polytechnic Institute, is developing a compact, high-precision surgical robot that will operate within the bore of an MRI scanner, as well as the electronic control systems and software that go with it, to improve prostate biopsy accuracy.

To develop robots that can work inside an MRI scanner, Fischer and his team have had to overcome several significant technical challenges. Since the MRI scanner uses a powerful magnet, the robot, including all of its sensors and actuators, must be made from nonferrous materials. "On top of all this, we had to develop the communications protocols and software interfaces for controlling the robot, and interface those with higher-level imaging and planning systems," says Fischer. “The robot must be easy for a non-technical surgical team to sterilize, set up, and place in the scanner. This all added up to a massive systems integration project which required many iterations of the hardware and software to get to that point."

In other research, virtual reality is being integrated with rehabilitation robots to expand the range of therapy exercise, increasing

motivation and physical treatment effects. Exciting discoveries are being made with nanoparticles and nanomaterials. For example, nanoparticles can traverse the “blood-brain barrier.” In the future, nanodevices can be loaded with “treatment payloads” of medicine that can be injected into the body and automatically guided to the precise target sites within the body. Soon, ingestible, broadband-enabled digital tools will be available that use wireless technology to help monitor internal reactions to medications.

“Existing technologies are being combined in new ways to streamline the efficiency of healthcare operations,” says Keefe. “While at the same time, emerging robotic technologies are being harnessed to enable intriguing breakthroughs in medical care.”

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How Robots Work
BY TOM HARRIS

Robots and Artificial Intelligence

Kitano's PINO "The Humanoid Robot"
Kitano's PINO "The Humanoid Robot"
PHOTO COURTESY KITANO SYMBIOTIC SYSTEMS PROJECT
Artificial intelligence (AI) is arguably the most exciting field in robotics. It's certainly the most controversial: Everybody agrees that a robot can work in an assembly line, but there's no consensus on whether a robot can ever be intelligent.

Like the term "robot" itself, artificial intelligence is hard to define. Ultimate AI would be a recreation of the human thought process -- a man-made machine with our intellectual abilities. This would include the ability to learn just about anything, the ability to reason, the ability to use language and the ability to formulate original ideas. Roboticists are nowhere near achieving this level of artificial intelligence, but they have made a lot of progress with more limited AI. Today's AI machines can replicate some specific elements of intellectual

ability.

Computers can already solve problems in limited realms. The basic idea of AI problem-solving is very simple, though its execution is complicated. First, the AI robot or computer gathers facts about a situation through sensors or human input. The computer compares this information to stored data and decides what the information signifies. The computer runs through various possible actions and predicts which action will be most successful based on the collected information. Of course, the computer can only solve problems it's programmed to solve -- it doesn't have any generalized analytical ability. Chess computers are one example of this sort of machine.

Some modern robots also have the ability to learn in a limited capacity. Learning robots recognize if a certain action (moving its legs in a certain way, for instance) achieved a desired result (navigating an obstacle). The robot stores this information and attempts the successful action the next time it encounters the same situation. Again, modern computers can only do this in very limited situations. They can't absorb any sort of information like a human can. Some robots can learn by mimicking human actions. In Japan, roboticists have taught a robot to dance by demonstrating the moves themselves.

Some robots can interact socially. Kismet, a robot

at M.I.T's Artificial Intelligence Lab, recognizes human body language and voice inflection and responds appropriately. Kismet's creators are interested in how humans and babies interact, based only on tone of speech and visual cue. This low-level interaction could be the foundation of a human-like learning system.

Kismet and other humanoid robots at the M.I.T. AI Lab operate using an unconventional control structure. Instead of directing every action using a central computer, the robots control lower-level actions with lower-level computers. The program's director, Rodney Brooks, believes this is a more accurate model of human intelligence. We do most things automatically; we don't decide to do them at the highest level of consciousness.

The real challenge of AI is to understand how natural intelligence works. Developing AI isn't like building an artificial heart -- scientists don't have a simple, concrete model to work from. We do know that the brain contains billions and billions of neurons, and that we think and learn by establishing electrical connections between different neurons. But we don't know exactly how all of these connections add up to higher reasoning, or even low-level operations. The complex circuitry seems incomprehensible.

Because of this, AI research is largely theoretical. Scientists hypothesize on how and why we learn

and think, and they experiment with their ideas using robots. Brooks and his team focus on humanoid robots because they feel that being able to experience the world like a human is essential to developing human-like intelligence. It also makes it easier for people to interact with the robots, which potentially makes it easier for the robot to learn.

Just as physical robotic design is a handy tool for understanding animal and human anatomy, AI research is useful for understanding how natural intelligence works. For some roboticists, this insight is the ultimate goal of designing robots. Others envision a world where we live side by side with intelligent machines and use a variety of lesser robots for manual labor, health care and communication. A number of robotics experts predict that robotic evolution will ultimately turn us into cyborgs -- humans integrated with machines. Conceivably, people in the future could load their minds into a sturdy robot and live for thousands of years!

In any case, robots will certainly play a larger role in our daily lives in the future. In the coming decades, robots will gradually move out of the industrial and scientific worlds and into daily life, in the same way that computers spread to the home in the 1980s.

The best way to understand robots is to look at specific designs. The links below will show you a variety of robot projects around the world.

1)BionicANTs
https://www.youtube.com/watch?v=FFsMM...
https://www.youtube.com/watch?v=aBfKo...

2)Batterfly
htt//www.youtube.com/watch?v=o7a7Z...
https://www.youtube.com/watch?v=34V1s...
https://www.youtube.com/watch?v=1gu3z...

3)seagull
https://www.youtube.com/watch?v=UBWAc...
https://www.youtube.com/watch?v=2by-z...

4)Dragonfly
https://www.youtube.com/watch?v=W6hN2...
https://www.youtube.com/watch?v=4C9LT...
7
5)Kangaroo robot
https://www.youtube.com/watch?v=_4luJ...

6)Robot Chef
https://www.youtube.com/watch?v=SNy6f...
https://www.youtube.com/watch?v=rNcPV...
https://www.youtube.com/watch?v=mKCVo...

7)Cheetah Robot
https://www.youtube.com/watch?v=chPan...

8)Chip
https://www.youtube.com/watch?v=fSByy...

9)Swimming motion

https://www.youtube.com/watch?v=sIpIA...
https://www.youtube.com/watch?v=h-6Fb...

10)BostonDynamics
https://www.youtube.com/watch?v=rVlhM...
https://www.youtube.com/watch?v=tf7IE...

11)Awesome Robot Spider!
https://www.youtube.com/watch?v=-vVbl...
https://www.youtube.com/watch?v=HfiHO...

12)Robo Shark
https://www.youtube.com/watch?v=uj457...
https://www.youtube.com/watch?v=aDEtO...

13)Robotic fish
https://www.youtube.com/watch?v=-wBJP...
https://www.youtube.com/watch?v=eO9os...

Tech News

Published on Feb 13, 2017

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These seven advanced robots are not available for purchase. They were developed as prototypes for future robots. Does science fiction movies become reality?

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7. Cassie Next Generation Robot
6. Valkyrie Nasa
5. 13 Foot Tall Humanoid
4. Asimo New Generation
3. Atlas Robot
2. Spot Mini
1. HRP 4 Robot

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4. Internet Celebrity

The Insta-Celebrity Engagement Is Somehow Very 2018
Naomi FryJuly 13, 2018 12:45 PM

Therst sign that a new wave of celebrity matrimony was upon us came in late February, when the actress and model Emily Ratajkowski announced to her 18.4 million Instagram followers that she had got married, in a quickie City Hall wedding, to her boyfriend of mere weeks, the independent-film producer Sebastian Bear-McClard. On Instagram's Stories feature, Ratajkowski posed in a seventies-style mustard-colored Zara pantsuit and a black wide-brimmed hat, alongside her new husband,

a few select friends, and a concerned-looking pug. “Soooo I have a surprise,” she wrote. “I got married today.”

Next, in June, the singer Ariana Grande and the comedian Pete Davidson announced their engagement, only a month after being spotted together for the first time. Since then, they have declared their love multiple times on social media and got matching tattoos of a favorite acronym, H2GKMO (“Honest to God Knock Me Out”).

Grande tweeted a compliment about Davidson's penis (prompting many online to venture that the comedian's casual swagger might be understood as "big-dick energy," or B.D.E., a supposition that quickly became a meme; Grande's original tweet has since been deleted), and Davidson went on Jimmy Fallon and asserted that being engaged to Grande made him feel like he "won a contest. So sick. It's fucking lit, Jimmy."

On Monday, Grande, too, suggested in a tweet (also since deleted) that “love is lit,” in response to yet another engagement: the musician Justin Bieber was rumored to have proposed to his girlfriend of a month, the model Hailey Baldwin, on a Bahamian holiday. In an Instagram post, Bieber confirmed the news, posting an rst sign that a new wave of celebrity matrimony was upon us came in late February, when the actress and model Emily Ratajkowski announced to her 18.4 million Instagram

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his girlfriend of a month, the model Hailey Baldwin, on a Bahamian holiday. In an Instagram post, Bieber confirmed the news, posting an impassioned message to his betrothed. “Listen plain and simple Hailey I am soooo in love with everything about you!” he wrote. “Gods timing really is literally perfect, we got engaged on the seventh day of the seventh month, the number seven is the number of spiritual perfection, it’s true GOOGLE IT!”

Justin Bieber and Hailey

Baldwin, in New York, earlier this month. The couple recently got engaged after dating for just a month.
Justin Bieber and Hailey Baldwin, in New York, earlier this month. The couple recently got engaged after dating for just a month.
Photograph by Gotham / Getty
It would be easy to discount these extremely public, extremely quick engagements as the frivolous choices of the very young. (Ratajkowski is the oldest celebrity of the group, at twenty-seven, while

Baldwin is the youngest, at twenty-two.) And yet they captivate our attention, seducing and taunting us with visions of heightened sexual and romantic congress, the likes of which none of us civilians have surely ever experienced. Like celebrity itself, these unions arouse both derision and jealousy: here we are, slogging along in our unremarkable lives and marriages, while these famous, gorgeous youngsters, with their ample resources, are rubbing our noses in their devil-may-care

love-life decisions. How foolish they are! How lucky!

Unlike the fast couplings of years past—Cher and Gregg Allman, Tommy Lee and Pamela Anderson, Mariah Carey and Nick Cannon (now all divorced)—the recent series of flash affiancing, observed by vast social-media followings, seems to operate according to the corporate principles of the age. Is the Grande and Davidson union so different from the alliance, last year, between Supreme and Louis

Vuitton? Just as the luxury giant gained edge from its association with the streetwear brand, which, in turn, was newly elevated to realms of high fashion (the collection included a stately wood trunk dyed Supreme red, and slobby hoodies bearing the LV logo), so did Grande, with her anime-character high ponytail and saucer-like eyes, gain grit and heft from her association with the hulking comedian, while the lesser-known Davidson was instantly introduced to a new, more mainstream

audience. And, as with learning of a new album drop from Beyoncé and Jay-Z, or a surprise Fenty Beauty pop-up store, the moment that one is greeted with the gift of Bieber and Baldwin's new engagement provides a kind of pleasurable shock, a deus ex machina of the news.

There is something American Dream-y about the "surprise!" model: the fantasy of the shiny and new, either avoiding or concealing the process behind the result. But what would such a process even look like in

the case of these couples who have clearly bypassed the more mundane, and perhaps comforting, aspects of domesticity? Their attempts to hit the traditional relationship markers—a bit of normal-people cosplay—can seem almost touching: Bieber asking Stephen Baldwin, Hailey's father, for his daughter's hand in marriage; Grande sharing the news of her move-in day with Davidson by posting, on Instagram Stories, an image of a smiling Spongebob Squarepants and the words "Us in our new apartment

with no furniture 1 speaker and red vines."
Paradoxically, the public nature of these engagement announcements often makes the private emotions and confusions that are revealed in them seem even more poignant. Bieber began his Instagram announcement by writing to his mind-boggling hundred and one million followers, "Was gonna wait a while to say anything but word travels fast," before easing seamlessly into addressing Baldwin herself, open and hopeful, and yet strangely formal, using her

full name, as if to avoid confusion: “You are the love of my life Hailey Baldwin.” Then he added, as if he, too, were almost befuddled by his new status, “It’s funny because now with you everything seems to make sense!” I believe him. about you!” he wrote. “Gods timing really is literally perfect, we got engaged on the seventh day of the seventh month, the number seven is the number of spiritual perfection, it’s true GOOGLE IT!”

Justin Bieber and Hailey

Baldwin, in New York, earlier this month. The couple recently got engaged after dating for just a month. Justin Bieber and Hailey Baldwin, in New York, earlier this month. The couple recently got engaged after dating for just a month. Photograph by Gotham / Getty

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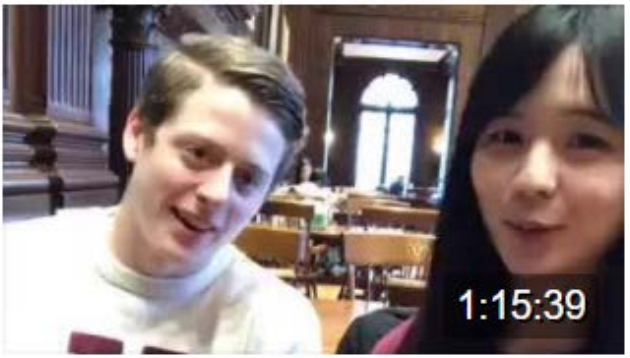
An internet celebrity is an individual

whose fame is primarily derived from their Internet presence. Many of the top web

celebs have a proven following that rivals popular television programs.

Specifically, the iStardom Top 10 has a fan base exceeding 8 million people.

My first live broadcast



【越洋拜年】#線上直播 哈佛校園風雲人物 Stephen Turban...
184K views · January 29

Alice and I met at 7 am, and I knew she meant business almost immediately. For one, she had a tripod for her cellphone. She also had a glint in her eye that told me she was

both excited and that she would kill me if I messed up.

At 7:30 am, we wrote a quick description of our talk and hit a big "live" button. Then, we waited.

For the first few seconds, the number of people watching our live broadcast stayed at an unintimidating zero. Then, it slowly began to grow. First, there were 50 people watching. Then 100. Soon,

there were nearly a thousand people watching Alice and I live from around the world.

At first, it felt a bit strange. In theory, we were talking to a thousand people, yet it still felt like we were sitting in a dining hall chatting alone. However, as the conversation went on, I could understand the appeal for both fans and broadcasters.

What's remarkable about live broadcasts is the interactivity between fans and announcers. As more people joined the broadcast, they'd send questions and make comments about what we'd said. By the end, Alice and I were probably spending more than half of our time directly answering these questions and comments, as opposed to following a set script.

I didn’t expect this, but I loved it. I actually felt like I connected with some of the viewers, something I don’t think I’d have felt through another medium.

After about an hour, Alice and I said goodbye and signed off. We’d chatted about our lives, listened to the concerns of Taiwanese students, and talked about some of our favorite study habits. I didn’t expect this, but I loved it. I

actually felt like I connected with some of the viewers, something I don't think I'd have felt through another medium.

Over the next few months, I did dozens of live broadcasts with Alice and another friend, Emily Song. In large part, this was because I really enjoyed chatting with fans directly. But another side benefit was improving my Chinese.

Unfortunately, live broadcasts have become a touchy subject in mainland China. In February, the central party began a crackdown on live accounts, particularly of individuals overseas. The crackdown resulted in Sina Weibo changing their live broadcasting policies to make it impossible for foreigners to broadcast.

After my account was blocked for a few weeks, I knew I

needed to try a different outlet. So, I moved to the second hottest form of media in China: video.

Today, people's bodies are more perfectly melded with technology than we could have imagined mere decades ago. Superhuman strength, dexterity, and senses are no longer science-fiction — they're already here.

Though cutting-edge technology offers us a glimpse into the capabilities of enhanced humans in the future, it's most useful these days as support for people who have been affected by a

disability. Cyborg technology can replace missing limbs, organs, and bodily senses. Sometimes, it can even enhance the body's typical function.

Here are six of the most striking examples of this cyborg present. They show us how far we have already come, and how far we could go in the future.

Hearing Colors With An Antenna



Image Credit: TED

Activist and artist Neil Harbisson was born without the ability to see color. In 2004, he decided to change that. He mounted an electronic antenna to the lower back of his skull that turns frequencies of light into vibrations his brain interprets as sound, allowing him to "hear color." These frequencies are even able to go beyond the visual spectrum, allowing him to "hear" invisible frequencies such as infrared and ultraviolet.

“There is no difference between the software and my brain, or my antenna and any other body part. Being united to cybernetics makes me feel that I am technology,” he said in a National Geographic interview.

His body modification was not always well-accepted: the British government took issue when the antenna showed up in Harbisson’s passport photo. Harbisson fought the government to keep it in. He won, becoming the first “legally recognized” cyborg.

The LUKE Arm



Image Credit: DARPA

The LUKE Arm (named after Luke Sywalker) is a highly advanced prosthetic that lends the wearer a sense of touch. A specialized motor can provide feedback to mimic the resistance offered by various physical objects — users can feel that a pillow offers less resistance than a brick. With the help of funding from the Defense Advanced Research Projects Agency (DARPA), the finished design received U.S. Food and Drug Administration (FDA) approval in 2014.

Electronic sensors receive signals from the wearer's muscles that the device then translates into physical movement. The wearer can manipulate multiple joints at once through switches that can be controlled with his or her feet. The first commercially available LUKE arm became available to a small group of military amputees in late 2016. Amputees can now buy the prosthetic through their physicians, but the device is rumored to cost around $100,000.

Artificial Vision



Image Credit: seeingwithsound/YouTube

In his 20s, Jens Naumann was involved in two separate accidents that shot metal shards into his eyes, causing him to lose his vision. In 2002, at the age of 37, Naumann participated in a clinical trial performed at the Lisbon-based Dobelle Institute in which a television camera was connected straight to his brain, bypassing his faulty eyes. Dots of light combined to form shapes and outlines of the world around him, giving him "this kind of dot matrix-type vision."

The system enabled him to see Christmas lights outlining his home in Canada that year.

Unfortunately, the system failed only after a couple of weeks. And when William Dobelle, the original inventor of the technology, passed away in 2004, he left behind almost no documentation, leaving technicians no instructions for how to repair Naumann's system. In 2010, Naumann had the system surgically removed, rendering him completely blind once again.

Mind-Controlled Bionic Leg



Image Credit: RIC

The mind-controlled bionic leg was first used in 2012 by Zac Vawter, a software engineer from Seattle whose leg was amputated above the knee in 2009. The technology that translates brain signals into physical movement, called Targeted Muscle Reinnvervation (TMR), was first created in 2003 for upper-limb prosthetics. But Vawter's prosthetic was revolutionary because it was the first leg prosthetic use it.

In 2012, Zac Vawter climbed the 2,100 steps of the Willis Tower in Chicago, with the help of his prosthetic leg. It took him 53 minutes and nine seconds.

The bebionic Hand



Image Credit: Ottobock

Prosthetics company bebionic has created some of the most sophisticated prosthetic hands to date. Individual motors move every joint along every digit independently. To help with everyday use, the bebionic has 14 pre-determined grip patterns. Highly sensitive motors vary the speed and force of the grip in real-time — it's delicate enough for the user to hold an egg between his or her index finger and thumb, and robust enough to hold up to 45 kilograms (99 pounds).

The bebionic hand has been available commercially since 2010. Models released in the years since have improved its battery life, flexibility, and software.

The Eyeborg Project



Image Credit: The Eyeborg Project

Toronto-based filmmaker Rob Spence decided to replace his missing right eye with a prosthetic equipped with a wirelessly-transmitting video camera. Thanks to a partnership with RF wireless design company and a group of electrical engineers, Spence created a prosthetic eye shell that could house enough electronics in such a small, confined space.

The camera can record up to 30 minutes of footage before depleting the battery. Spence used footage captured by his eye prosthetic in a documentary called *Deus Ex: The Eyeborg Documentary.*

Web celebrities are an entirely new breed of stars and ones that have rising influence," said Daisy Whitney, TelevisionWeek's new media reporter and host of the New Media Minute. Brand marketers, production companies, and traditional media should pay attention to who's hot online and find creative ways to partner with them.

An in internet celebrity is someone whose primary source of fame originates from the Internet." This is in contrast to news sources, movies, TV, books, etc.

1. **Promote yourself. Social networking sites are the best, try Buzznet, Facebook, Myspace, and Bebo. Nothing childish. Glogster is also a good new one. Add everyone! You need to have at least 300 friends before even being close to Internet stardom.**

There's a college in China that teaches you how to become a social media celebrity

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The INSIDER Summary:

- **Today, Instagram influencers and YouTube stars can make millions by being famous online.**
- **A college in China offers a degree in "Modelling and Etiquette" that teaches you how to make it big on social media.**

- **Internet celebrities in China, known as *wang hong* , can make over $46 million a year.**
- **So here's a quick question: How do we enroll?**
-

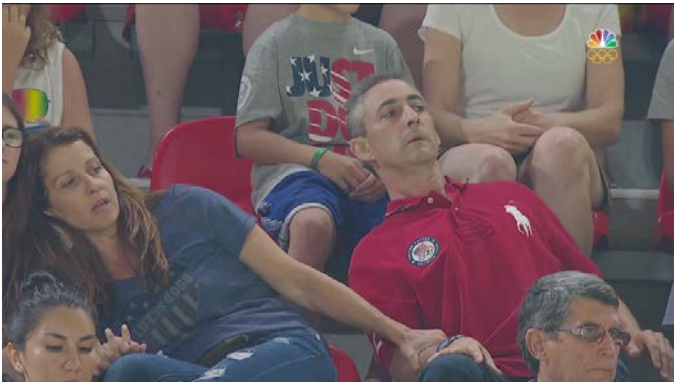


Apple Ripper #SuperSage Northcutt

How ‘bout them apples? UFC fighter Sage Northcutt tweeted a video of

himself ripping an apple in half with his bare hands November 29 and encouraged users to do the same, using the hashtag #SuperSage. The video caught Chrissy Teigen's eye as she pleaded with her Twitter followers: "Please someone, I need #supersage to rip open an apple as he says happy birthday to me. It's all I want." Northcutt obliged, sending her a personalized video on her November 30 birthday.

fcy



Aly Raisman's Parents

Olympic gymnast Aly Raisman’s parents, Lynn and Rick, were so nervous while watching their daughter compete in the Rio Summer Olympics in August 2016 that they became a meme themselves thanks to their anxious reactions in

Why YouTube Stars Influence Millennials More Than Traditional Celebrities

Millennials are currently the largest consumer demographic with about $1.3 trillion in buying power as at the end of 2015. This powerful demographic is a choice target for brands, but millennials in large part don't watch TV and don't care much what mainstream celebrities have to say about products or services. They trust their social media tribes and peer-to-peer advice the most.
In a study commissioned by Defy Media, 63% of respondents aged between 13-24 said that they would try a brand or a product recommended by a YouTube

content creator, whereas only 48% mentioned the same about a movie or TV star. Businesses are taking notice and turning more to common folk than mainstream celebrities to reach millennials. Interestingly, the influence of YouTube stars on younger folks goes well beyond shopping.

1. YouTube stars are better at developing relationships

Traditional celebrities always seem to act according to their PR strategies rather than free will, and people don't relate to them. It can feel hard to understand where a carefully staged image ends and the real person starts. And millennials deeply despise inauthenticity.

YouTube personalities, on the contrary, connect better with people by being approachable and building intimate experiences with their viewers. They are not afraid to be goofy, funny, weird or speak up on very touchy and personal matters such as sex, divorce, domestic violence and racism. According to a study commissioned by Google, 40% of

millennial YouTube subscribers say that their favorite content creators understand them better than their friends and 70% of teens admit that they can relate to those folks more than to traditional celebrities.

2. YouTube stars drive more engagement

Reaching out to traditional celebrities and receiving a personal reply (not one issued by a hired rep) isn't something you'll imagine. On the other hand, YouTube personalities regularly reply to comments, act accessible on social media and schedule frequent Q&A sessions with their community, where no questions are off limit.

The relationship YouTube content creators develop with their fan base leads to higher engagement according to the same data shared by Google. Compared to videos created by mainstream celebrities, videos created by top 25 YouTube stars yield three times more views, 12 times more comments and two times more actions (thumbs ups, shares, clicks, etc.).

3. YouTube personalities set trends and shape pop culture

Most millennials agree that YouTubers set more trends than traditional celebrities these days. In fact, 70% of subscribers say that YouTube personalities change and shape the pop culture and 60% of them say they would make buying decisions based on the recommendation of their favorite YouTube star over the recommendation of a TV or movie star. Also, in a study conducted by University of Twente among teenagers who regularly watch YouTube, a number of respondents admitted that they feel interested "in what older YouTubers have to say about things" as it helps them to shape their own opinions and worldview on certain things such as design, beauty, games, relationships and conflict management. The influence of YouTube personalities may fall flat with older generations, who remain less exposed to the YouTube culture and prefer traditional media such as TVs and newspapers, where traditional celebrities still steer the conversations.

But with millennials, it’s at an all-time high.

You're Not Really Friends With That Internet Celebrity

Why you feel an illusion of closeness to your favorite online personality

Why do fans feel so close to people they don't know and have never met?

Before we get into the psychology, let's just look at it on a casual level. These celebrities are generally posting as themselves (or at least a characterized version of themselves). They share personal thoughts and what sometimes feel like intimate details of their lives. The

presentation is casual and often appears very authentic. It is, in essence, how we would expect a (very polished) friend might share something with us in a video. Furthermore, the celebrities often interact with fans through the comment sections or through likes, shares, retweets, and favorites. These lightweight interactions may feel like a true personal interaction with the celebrity.

However, these are not relationships at all. Rather, they are the illusion of a relationship supported by the broadcast medium. Why do they *feel* so real?

#1 Monty The Cat Who Was Born Without A Nasal Bridge





Elon Musk says humans must become cyborgs to stay relevant. Is he right?

Sophisticated artificial intelligence will make 'house cats' of humans, claims the entrepreneur, but his grand vision for mind-controlled tech may be a long way off

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Email
Wed 15 Feb 2017 03.00 ESTLast modified on Tue 21 Feb 2017 12.01 EST

Shares
4,061

Comments
335



One expert called Tesla founder Elon Musk's prediction that AI will surpass the human brain 'total baloney'. Photograph: Hector Guerrero/AFP/Getty Images

Humans must become cyborgs if they are to stay relevant in a future dominated by artificial intelligence. That was the warning from Tesla founder Elon Musk, speaking at an event in Dubai this weekend.

Musk argued that as artificial intelligence becomes more

sophisticated, it will lead to mass unemployment. “There will be fewer and fewer jobs that a robot can’t do better,” he said at the World Government Summit.



Actors, teachers, therapists – think your job is safe from artificial intelligence? Think again

Read more

If humans want to continue to add value to the economy, they must augment their capabilities through a “merger of biological intelligence and machine intelligence”. If we

fail to do this, we'll risk becoming "house cats" to artificial intelligence.

And so we enter the realm of brain-computer (or brain-machine) interfaces, which cut out sluggish communication middlemen such as typing and talking in favour of direct, lag-free interactions between our brains and external devices.

The theory is that with sufficient knowledge of the neural activity in the brain it will be possible to create "neuroprosthetics" that could allow us to communicate complex ideas telepathically or give us additional cognitive (extra memory) or sensory (night vision) abilities. Musk says he's working on an injectable mesh-like "neural lace" that fits on your brain to give it digital computing capabilities.

So where does the science end and the science fiction start?

Why I Want to be a Posthuman When I Grow Up

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I am apt to think, if we knew what it was to be an angel for one hour, we should return to this world, though it were to sit on the brightest throne in it, with vastly more loathing and reluctance than we would now descend into a loathsome dungeon or sepulchre.[1] *Berkley* (1685-1753)

Abstract

Extreme human enhancement could result in "posthuman" modes of being. After offering some definitions and conceptual clarification, I argue for two theses. First, some posthuman modes of being would be very worthwhile. Second, it could be very good for human beings to become posthuman.

1. Setting the stage

The term "posthuman" has been used in very different senses by different authors.[2] I am sympathetic to the view that the word often

causes more confusion than clarity, and that we might be better off replacing it with some alternative vocabulary. However, as the purpose of this paper is not to propose terminological reform but to argue for certain substantial normative theses (which one would naturally search for in the literature under the label "posthuman"), I will instead attempt to achieve intelligibility by clarifying the meaning that I shall assign to the word. Such terminological clarification is surely a minimum precondition for having a meaningful discussion about whether it might be good for us to become posthuman.

I shall define *a posthuman* as a being that has at least one posthuman capacity. By *a posthuman capacity*, I mean a general central capacity greatly exceeding the maximum attainable by any current human being without recourse to new technological means. I will use *general central capacity* to refer to the following:

- ***healthspan* – the capacity to remain fully healthy, active, and productive, both mentally and physically**
- ***cognition* – general intellectual capacities, such as memory, deductive and analogical reasoning, and attention, as well as special faculties such as the capacity to understand and appreciate music, humor, eroticism, narration, spirituality, mathematics, etc.**

- [1] (Berkeley, Sampson et al. 1897), p. 172.
- [2] The definition used here follows in the spirit of (Bostrom 2003). A completely different concept of "posthuman" is used in e.g. (Hayles 1999).

1

• *emotion* – the capacity to enjoy life and to respond with appropriate affect to life situations and other people

In limiting my list of general central capacities to these three, I do not mean to imply that no other capacity is of fundamental importance to human or posthuman beings. Nor do I claim that the three capacities in the list are sharply distinct or independent. Aspects of emotion and cognition, for instance, clearly overlap. But this short list may give at least a rough idea of what I mean when I speak of posthumans, adequate for present purposes.

In this paper, I will be advancing two main theses. The first is that some possible posthuman modes of being would be very good. I emphasize that the claim is not that *all* possible posthuman modes of being would be good. Just as some possible human modes of being are wretched and horrible, so too are some of the posthuman possibilities. Yet it would be of interest if we can show that there are some posthuman possibilities that would be very good. We might then, for example, specifically aim to realize those possibilities.

The second thesis is that it could be very good *for us* to become posthuman. It is possible to think that it could be good to be posthuman without it being good *for us* to become posthuman. This second thesis thus goes beyond the first. When I say "good for us", I do not mean to insist that for every single current human individual there is some posthuman mode of being such that it would be good for that individual to become posthuman in that way. I confine myself to making a weaker claim that allows for exceptions. The claim is that for *most* current human beings, there are possible posthuman modes of being such that it could be good for these humans to become posthuman in one of those ways.

It might be worth locating the theses and arguments to be presented here within a broader discourse about the desirability of posthumanity. Opponents of posthumanity argue that we should not seek enhancements of a type that could make us, or our descendants, posthuman. We can distinguish at least five different "levels" on which objections against posthumanity could be launched:

2

Table 1: Levels of objection to posthumanity

Level 0. "It can't be done"

Objections based on empirical claims to the effect that it is, and will remain, impossible or infeasible to create posthumans.

Level 1. "It is too difficult/costly"

Objections based on empirical claims that attempts to transform humans into posthumans, or to create new posthuman beings, would be too risky, or too expensive, or too psychologically distracting. Concerns about medical side-effects fall into this category, as do concerns that resources devoted to the requisite research and treatment would be taken away from more important areas.

Level 2. "It would be too bad for society"

Objections based on empirical claims about social consequences that would follow from the successful creation of posthuman beings, for example concerns about social inequality, discrimination, or conflicts between humans and posthumans.

Level 3. "Posthuman lives would be worse than human lives"

Objections based on normative claims about the value of posthuman lives compared to human lives.

Level 4. "We couldn't benefit"

Objections based on agent-relative reasons against human beings transforming themselves into posthuman beings or against humans bringing new posthuman beings into existence. Although posthuman lives might be as good as or better than human lives, it would be bad *for us* to become posthuman or to create posthumans.

This paper focuses on levels 3 and 4. I am thus setting aside issues of feasibility, costs, risks, side-effects, and social consequences. While those issues are obviously important when considering what we have most reason to do all things considered, they will not be addressed here.

Some further terminological specifications are in order. By *a mode of being* I mean a set of capacities and other general parameters of life. A posthuman mode of being is one that includes at least one posthuman capacity.

I shall speak of the value of particular modes of being. One might hold that primary value-bearers are some entities other than modes of being; e.g. mental states, subjective experiences, activities, preference-satisfactions, achievements, or particular lives. Such views are consistent with this paper. The position I seek to defend is consistent with a wide variety of formal and substantive theories of value. I shall speak of the value of modes of being for the sake of simplicity and convenience, but in doing so I do not mean to express a commitment to any particular controversial theory of value.

We might interpret "the values" of modes of beings as proxies for values that would be realized by particular lives instantiating the mode of being in question. If we proceed in this way, we create some indeterminacy. It is possible for a mode of being (and even more so for a *class* of modes of being) to be instantiated in a range of different possible lives, and for some of these lives to be good and others to be bad. In such a case, how could one assign a value to the mode of being itself?

Another way of expressing this concern is by saying that the value of instantiating a

particular mode of being is context-dependent. In one context, the value might be high; in another, it might be negative. Nevertheless, it is useful to be able to speak of values of items other than those we accord basic intrinsic value. We might for example say that it is valuable to be in

good health and to have some money. Yet neither having good health nor having some money is guaranteed to make a positive difference to the value of your life. There are contexts in which the opposite is true. For instance, it could be the case that because you had some money you got robbed and murdered, or that because you were always in rude health you lacked a particular (short, mild) disease experience that would have transformed your mediocre novel into an immortal masterpiece. Even so, we can say that health and money are good things without thereby implying that they are intrinsically valuable or that they add value in all possible contexts. When we say that they are valuable we might merely mean that these things would *normally* make a positive contribution to the value of your life; they would add value in a very wide range of plausible contexts. This mundane meaning is what I have in mind when I speak of modes of being having a value: i.e., in a very wide range of plausible contexts, lives

instantiating that mode of being would tend to contain that value.[3]

A life might be good or bad because of its causal consequences for other people, or for the contribution it makes to the overall value of a society or a world. But here I shall focus on the value that a life has for the person whose life it is: how good (or bad) it is for the subject to have this life. The term "well-being" is often used in this sense.[4]

When I speak of the value of a life here, I do not refer to the moral status of the person whose life it is. It is a separate question what the moral status would be of human and posthuman beings. We can assume for present purposes that human and posthuman persons would have the same moral status. The value of a life refers, rather, to how well a life goes for its subject. Different human lives go differently well, and in this sense their lives have different values. The life of a person who dies from a painful illness at age 15 after having lived in extreme poverty and social isolation is typically worse and has less value than that of a person who has an 80-year- long life full of joy, creativity, worthwhile achievements, friendships, and love. Whatever terminology we use to describe the difference, it is plain that the latter kind of life is more worth having. One way to express this platitude is by saying that the latter life is more valuable than the former.[5]

This is consistent with assigning equal moral

status to the two different persons whose lives are being compared.

Some pairs of possible lives are so different that it is difficult – arguably impossible – to compare their value. We can leave aside the question of whether, for every pair of possible lives, it is true either than one is better than the other, or that they are equally good; that is, whether all pairs of possible lives have commensurable value. We shall only assume that at least for some pairs of possible lives, one is definitely better than the other.

To supply our minds with a slightly more concrete image of what becoming posthuman might be like, let us consider a vignette of how such a process could unfold.

[3] **Compare this take on "mundane values" with the notion of mid-level principles in applied ethics. The principle of respecting patient autonomy is important in medical ethics. One might accept this if one holds that respect for patient autonomy is an implication of some fundamental ethical principle. But equally, one might accept patient autonomy as an important mid-level principle even if one merely holds that this is a way of expressing a useful rule of thumb, a sound policy rule, or a derived ethical rule that is true in a world like ours because of various empirical facts even though it is not necessarily true in all possible worlds. For the role of mid-level principles in applied ethics, see e.g. (Beauchamp and Childress 2001).**

[4] **I am thus not concerned here with global evaluations into which individuals' well-being might**

enter as a factor, e.g. evaluations involving values of diversity, equality, or comparative fairness.

[5] I do not assume that the value of a life, or well-being, supervenes on the mental experiences of a person, nor that it supervenes on a thin time-slice of a person's life. It could represent a wider and more global evaluation of how well a person's life is going.

2. Becoming posthuman

Let us suppose that you were to develop into a being that has posthuman healthspan and posthuman cognitive and emotional capacities. At the early steps of this process, you enjoy your enhanced capacities. You cherish your improved health: you feel stronger, more energetic, and more balanced. Your skin looks younger and is more elastic. A minor ailment in your knee is cured. You also discover a greater clarity of mind. You can concentrate on difficult material more easily and it begins making sense to you. You start seeing connections that eluded you before. You are astounded to realize how many beliefs you had been holding without ever really thinking about them or considering whether the evidence supports them. You can follow lines of thinking and intricate argumentation farther without losing your foothold. Your mind is able to recall facts, names, and concepts just when you need them. You are able to sprinkle your conversation with witty remarks and poignant anecdotes. Your

friends remark on how much more fun you are to be around. Your experiences seem more vivid. When you listen to music you perceive layers of structure and a kind of musical logic to which you were previously oblivious; this gives you great joy. You continue to find the gossip magazines you used to read amusing, albeit in a different way than before; but you discover that you can get more out of reading Proust and *Nature*. You begin to treasure almost every moment of life; you go about your business with zest; and you feel a deeper warmth and affection for those you love, but you can still be upset and even angry on occasions where upset or anger is truly justified and constructive.

As you yourself are changing you may also begin to change the way you spend your time. Instead of spending four hours each day watching television, you may now prefer to play the saxophone in a jazz band and to have fun working on your first novel. Instead of spending the weekends hanging out in the pub with your old buddies talking about football, you acquire new friends with whom you can discuss things that now seem to you to be of greater significance than sport. Together with some of these new friends, you set up a local chapter of an international non- profit to help draw attention to the plight of political prisoners.

By any reasonable criteria, your life improves as you take these initial steps towards

becoming posthuman. But thus far your capacities have improved only within the natural human range. You can still partake in human culture and find company to engage you in meaningful conversation. Consider now a more advanced stage in the transformation process...

You have just celebrated your 170th birthday and you feel stronger than ever. Each day is a joy. You have invented entirely new art forms, which exploit the new kinds of cognitive capacities and sensibilities you have developed. You still listen to music – music that is to Mozart what Mozart is to bad Muzak. You are communicating with your contemporaries using a language that has grown out of English over the past century and that has a vocabulary and expressive power that enables you to share and discuss thoughts and feelings that unaugmented humans could not even think or experience. You play a certain new kind of game which combines VR-mediated artistic expression, dance, humor, interpersonal dynamics, and various novel faculties and the emergent phenomena they make possible, and which is more fun than anything you ever did during the first hundred years of your existence. When you are playing this game with your friends, you feel how every fiber of your body and mind is stretched to its limit in the most creative and imaginative way, and you are creating new realms of abstract and concrete

beauty that humans could never (concretely) dream of. You are always ready to feel with those who suffer misfortunes, and to work hard to help them get back on their feet. You are also involved in a large voluntary organization that works to reduce suffering of animals in their natural environment in ways that permit ecologies to continue to function in traditional ways; this involves political efforts combined with advanced science and information processing services. Things are getting better, but already each day is fantastic.

As we seek to peer farther into posthumanity, our ability to concretely imagine what it might be like trails off. If, aside from extended healthspans, the essence of posthumanity is to be

able to have thoughts and experiences that we cannot readily think or experience with our current capacities, then it is not surprising that our ability to imagine what posthuman life might be like is very limited. Yet we can at least perceive the outlines of some of the nearer shores of posthumanity, as we did in the imaginary scenario above. Hopefully such thought experiments are already enough to give plausibility to the claim that becoming posthuman could be good for us.

In the next three sections we will look in a little more detail at each of the three general central capacities that I listed in the introduction

section. I hope to show that the claim that it could be very good to be posthuman is not as radical as it might appear to some. In fact, we will find that individuals and society already in some ways seem to be implicitly placing a very high value on posthuman capacities – or at least, there are strong and widely accepted tendencies pointing that way. I therefore do not regard my claim as in any strong sense revisionary. On the contrary, I believe that the denial of my claim would be strongly revisionary in that it would force us to reject many commonly accepted ethical beliefs and approved behaviors. I see my position as a conservative extension of traditional ethics and values to accommodate the possibility of human enhancement through technological means.

3. Healthspan

It seems to me fairly obvious why one might have reason to desire to become a posthuman in the sense of having a greatly enhanced capacity to stay alive and stay healthy.[6] I suspect that the majority of humankind already has such a desire implicitly.

People seek to extend their healthspan, i.e. to remain healthy, active, and productive. This is one reason why we install air bags in cars. It may also explain why we go to the doctor when we are sick, why higher salaries need to be paid to get workers to do physically dangerous work, and why governments and charities give

money to medical research.[7] Instances of individuals sacrificing their lives for the sake of some other goal, whether suicide bombers, martyrs, or drug addicts, attract our attention precisely because their behavior is unusual. Heroic rescue workers who endanger their lives on a dangerous mission are admired because we assume that they are putting at risk something that most people would be very reluctant to risk, their own survival.

For some three decades, economists have attempted to estimate individuals' preferences over mortality and morbidity risk in labor and product markets. While the tradeoff estimates vary considerably between studies, one recent meta-analysis puts the median value of the value of a statistical life for prime-aged workers to about $7 million in the United States.[8] A study by the EU's Environment Directorates-General recommends the use of a value in the interval €0.9 to €3.5 million.[9] Recent studies by health economists indicate that improvements in the health status of the U.S. population over the 20th century have made as large a contribution to raising the standards of living as all other forms of consumption growth combined.[10] While the exact numbers are debatable, there is little doubt that most people place a very high value on their continued existence in a healthy state.

Admittedly, a desire to extend one's healthspan is not necessarily a desire to become

posthuman. To become posthuman by virtue of healthspan extension, one would need to achieve

[6] Having such a capacity is compatible with also having the capacity to die at any desired age. One might thus desire a capacity for greatly extended healthspan even if one doubts that one would wish to live for more than, say, 80 years. A posthuman healthspan capacity would give one the option of much longer and healthier life, but one could at any point decide no longer to exercise the capacity.

[7] Although on the last item, see (Hanson 2000) for an alternative view.[8] (Viscusi and Aldy 2003).

[9] (Johansson 2002).

[10] (Murphy and Topel 2003; Nordhaus 2003).

the capacity for a healthspan that greatly exceeds the maximum attainable by any current human being without recourse to new technological means. Since at least some human beings already manage to remain quite healthy, active, and productive until the age of 70, one would need to desire that one's healthspan were extended greatly beyond this age in order that it would count as having a desire to become posthuman.[11]

Many people will, if asked about how long they would wish their lives to be, name a figure between 85 and 90 years.[12] In many cases, no doubt, this is because they assume that a life significantly longer than that would be marred by deteriorating health – a factor from which we must abstract when considering the desirability

of healthspan extension. People's stated willingness to pay to extend their life by a certain amount does in fact depend strongly on the health status and quality of that extra life.[13] Since life beyond 85 is very often beset by deteriorating health, it is possible that this figure substantially underestimates how long most people would wish to live if they could be guaranteed perfect health.

It is also possible that a stated preference for a certain lifespan is hypocritical. Estimates based on revealed preferences in actual market choices, such as fatality risk premiums in labor markets or willingness to pay for health care and other forms of fatality risk reduction might be more reliable. It would be interesting to know what fraction of those who claim to have no desire for healthspan extension would change their tune if they were ever actually handed a pill that would reliably achieve this effect. My conjecture would be that when presented with a real-world choice, most would choose the path of prolonged life, health, and youthful vigor over the default route of aging, disease, and death.

One survey asked: "Based on your own expectations of what old age is like, if it were up to you, how long would you personally like to live – to what age?" Only 27% of respondents said they would like to live to 100 or older.[14] A later question in the same survey asked: "Imagine you could live to 100 or older, but

you'd have to be very careful about your diet, exercise regularly, not smoke, avoid alcohol, and avoid stress. Would it be worth it, or not?" To this, 64% answered in the affirmative! Why should *more* people want to live beyond 100 when restrictions on activity are imposed? Is it because it frames the question more as if it were a real practical choice rather than as an idle mind game? Perhaps when the question is framed as a mind game, respondents tend to answer in ways which they believe expresses culturally approved attitudes, or which they think signal socially desirable personal traits (such as having "come to terms" with one's own mortality), while this tendency is diminished when the framing suggests a practical choice with real consequences. We do not know for sure, but this kind of anomaly suggests that we should not take people's stated "preferences" about how long they would wish to live too seriously, and that revealed preferences might be a more reliable index of their guiding values.

It is also worth noting that only a small fraction of us commit suicide, suggesting that our desire to live is almost always stronger than our desire to die.[15] Our desire to live, *conditional on our being able to enjoy full health*, is even stronger. This presumption in favor of life is in fact so strong that if somebody wishes to die soon, even though they are seemingly fully healthy, with a long remaining healthy life

expectancy, and if their external circumstances in life are not catastrophically wretched, we would often tend suspect that they might be suffering from

[11] At least one human, Jeanne Calment, lived to 122. But although she remained in relatively fair health until close to her death, she clearly suffered substantial decline in her physical (and presumably mental) vigor compared to when she was in her twenties. She did not retain the capacity to be *fully* healthy, active, and productive for 122 years.

[12] (Cohen and Langer 2005).

[13] (Johnson, Desvousges et al. 1998).

[14] (Cohen and Langer 2005).

[15] For some, the reluctance to commit suicide might reflect a desire not to kill oneself rather than a desire not to die, or alternatively a fear of death rather than an authentic preference not to die.

depression or other mental pathology. Suicidal ideation is listed as a diagnostic symptom of depression by the American Psychiatric Association.[16]

Even if a stated preference against healthspan extension were sincere, we would need to question how well-considered and informed it is. It is of relevance that those who know most about the situation and are most directly affected by the choice, namely the elderly, usually prefer life to death. They usually do so when their health is poor, and overwhelmingly choose life when their health is at least fair. Now one can argue that a mentally intact 90-

year-old is in a better position to judge how their life would be affected by living for another year than she was when she was 20, or 40. If most healthy and mentally intact 90-year-olds prefer to live for another year (at least if they could be guaranteed that this extra year would be one of full health and vigor), this would be evidence against the claim that it would be better for these people that their lives end at 90.[17] Similarly, of course, for people of even older age.

One can compare this situation with the different case of somebody becoming paraplegic. Many able-bodied people believe that their lives would not be worth living if they became paraplegic. They claim that they would prefer to die rather than continuing life in a paraplegic state. Most people who have actually become paraplegic, however, find that their lives are worth living.[18] People who are paraplegic are typically better judges of whether paraplegic lives are worth continuing than are people who have never experienced what it is like to be paraplegic. Similarly, people who are 90 years old are in a better position to judge whether their lives are worth continuing than are younger people (including themselves at any earlier point in their lives).[19]

One study assessed the will to live among 414 hospitalized patients aged 80 to 98 years, presumably representing the frailer end of the distribution of the “old old”. 40.8% of

respondents were unwilling to exchange any time in their current state of health for a shorter life in excellent health, and 27.8% were willing to give up at most 1 month of 12 in return for excellent health.[20](Patients who were still alive one year later were even less inclined to give up life for better health, but with continued large individual variations in preferences.) The study also found that patients were willing to trade significantly less time for a healthy life than their surrogates assumed they would.

Research shows that life-satisfaction remains relatively stable into old age. One survey of 60,000 adults from 40 nations discovered a slight upward trend in life-satisfaction from the 20s to the 80s in age.[21] Life satisfaction showed this upward trend even though there was some loss of positive affect. Perhaps life-satisfaction would be even higher if positive affect were improved (a possibility we shall discuss in a later section). Another study, using a cross-sectional sample (age range 70-103 years), found that controlling for functional health constraints reversed the direction of the relationship between age and positive affect and produced a negative association between

[16] DSM-IV (American Psychiatric Association. 2000).

[17] This is a kind of Millian best-judge argument. However, if fear of death were irrational, one could argue that people who are closer to death are on average worse judges of the value for them of an

extra year of life, because their judgments would tend to be more affected by irrational fear.

[18] This basic result is reflected in many chronic disease conditions (Ubel, Loewenstein et al. 2003). The discrepancy of attitudes seems to be due to non-patient's failure to realize the extent to which patients psychologically adapt to their condition (Damschroder, Zikmund-Fisher et al. 2005).

[19] The analogy with paraplegia is imperfect in at least one respect: when the issue is healthspan extension, we are considering whether it would be worth living an extended life in perfect health and vigor. If anything, this discrepancy strengthens the conclusion, since it is more worth continuing living in perfect health than in poor health, not less worth it.

[20] (Tsevat, Dawson et al. 1998). See also (McShine, Lesser et al. 2000). For a methodological critique, see (Arnesen and Norheim 2003).

[21] (Diener and Suh 1998).

age and negative affect.[22] These findings suggest that some dimensions of subjective well-being, such as life-satisfaction, do not decline with age but might actually increase somewhat, and that the decline in another dimension of subjective well-being (positive affect) is not due to aging per se but to health constraints.

Most people reveal through their behavior that they desire continued life and health,[23] and most of those who are in the best position to judge the value of continued healthy life, at any age, judge that it is worth having. This constitutes

prima facie support for the claim that extended life is worth having even when it is not fully healthy. The fact that this holds true at all currently realized ages suggests that it is not a strongly revisionary view to hold that it could be good for many people to become posthuman through healthspan extension. Such a view might already be implicitly endorsed by many.

4. Cognition

People also seem to be keen on improving cognition. Who wouldn't want to remember names and faces better, to be able more quickly to grasp difficult abstract ideas, and to be able to "see connections" better? Who would seriously object to being able to appreciate music at a deeper level? The value of optimal cognitive functioning is so obvious that to elaborate the point may be unnecessary.[24] This verdict is reflected in the vast resources that society allocates to education, which often explicitly aims not only to impart specific items of knowledge but also to improve general reasoning abilities, study skills, critical thinking, and problem solving capacity.[25] Many people are also keen to develop various particular talents that they may happen to have, for example musical or mathematical, or to develop other specific faculties such as aesthetic appreciation, narration, humor, eroticism, spirituality etc. We also reveal our desire for improving our cognitive functioning when take a cup of coffee to increase our

alertness or when we regret our failure to obtain a full night's sleep because of the detrimental effects on our intellectual performance.

Again, the fact that there is a common desire for cognitive improvement does not imply that there is a common desire for becoming posthuman. To want to become posthuman through cognitive improvement, one would have to want a great deal of cognitive improvement. It is logically possible that each person would only want to become slightly more intelligent (or musical, or humorous) than he or she currently is and would not want any very large gain. I will offer two considerations regarding this possibility.

First, it seems to me (based on anecdotal evidence and personal observations) that people who are already endowed with above-average cognitive capacities are at least as eager, and, from what I can tell, actually *more* eager to obtain further improvements in these capacities than are people who are less talented in these regards. For instance, someone who is musically gifted is likely to spend more time and effort trying to further develop her musical capacities than is somebody who lacks a musical ear; and likewise for other kinds of cognitive gifts.

This phenomenon may in part reflect the external rewards that often accrue to those who excel in some particular domain. An extremely gifted musician might reap greater rewards in

terms of money and esteem from a slight further improvement in her musicality than would

[22] (Kunzmann, Little et al. 2000).

[23] This is fully consistent with the fact that many people knowingly engage in risky behaviors such as smoking. This might simply mean that they are unable to quit smoking, or that they desire the pleasure of smoking more than they desire a longer healthier life. It does not imply that they do not desire longer healthier life.

[24] One might even argue that a desire for cognitive improvement is a constitutive element of human rationality, but I will not explore that hypothesis here.

[25] U.S. *public* expenditure on education in 2003 was 5.7% of its GDP (World Bank. 2003).

somebody who is not musically gifted to begin with. That is, the difference in external rewards is sometimes greater for somebody who goes from very high capacity to outstandingly high capacity than it is for somebody who goes from average capacity to moderately high capacity. However, I would speculate that such differences in external rewards are only part of the explanation and that people who have high cognitive capacities are usually also more likely (or at least no less likely) to desire further increases in those capacities than are people of lower cognitive capacities even when only the intrinsic benefits of capacities are considered. Thus, if we imagine a group of people placed in

solitary confinement for the remainder of their lives, but with access to books, musical instruments, paints and canvasses, and other prerequisites for the exercise of capacities, I would hypothesize that those with the highest pre-existing capacity in a given domain would be more likely (or at least not less likely) to work hard to further develop their capacities in that domain, for the sake of the intrinsic benefits that the possession and exercise of those capacities bestow, than would those with lower pre-existing capacities in the same domain.[26] While $100 brings vastly less utility to a millionaire than to a pauper, the marginal utility of improved cognitive capacities does not seem to exhibit a similar decline.

These considerations suggest that there are continuing returns in the "intrinsic" (in the sense of non-instrumental, non-positional) utility of gains in cognitive capacities, at least within the range of capacity that we find instantiated within the current human population.[27] It would be implausible to suppose that the current range of human capacity, in all domains, is such that while increments of capacity within this range are intrinsically rewarding, yet any further increases outside the current human range would lack intrinsic value. Again, we have a prima facie reason for concluding that enhancement of cognitive capacity to the highest current human level, and probably beyond that, perhaps up to and

including the posthuman level, would be intrinsically desirable for the enhanced individuals. We get this conclusion if we assume that those who have a certain high capacity are generally better judges of the value of having that capacity or of a further increment of that capacity than are those who do not possess the capacity in question to the same degree.

4. Emotion

It is straightforward to determine what would count as an enhancement of healthspan. We have a clear enough idea of what it means to be healthy, active, and productive, and the difference between this state and that of being sick, incapacitated, or dead. An enhancement of healthspan is simply an intervention that prolongs the duration of the former state. It is more difficult to define precisely what would count as a cognitive enhancement because the measure of cognitive functioning is more multifaceted, various cognitive capacities can interact in complex ways, and it is a more normatively complex problem to determine what combinations of particular cognitive competences are of value in different kinds of environments. For instance, it is not obvious what degree of tendency to forget certain kinds of facts and experiences is desirable. The answer might depend on a host of contextual factors. Nevertheless, we do have some general idea of how we might value various increments

or decrements in many aspects of our cognitive functioning – a

[26] Complication: if high capacity were solely a result from having spent a lot of effort in developing that capacity, then the people with high capacity in some domain might be precisely those that started out having an unusually strong desire for having a strong capacity in that domain. It would then not be surprising that those with high capacity would have the strongest desire for further increases in capacity. Their stronger desire for higher capacity might then not be the result of more information and better acquaintance with what is at stake, but might instead simply reflect a prior inclination.

[27] It would be more difficult to determine whether the marginal intrinsic utility of gains in capacity are constant, or diminishing, or increasing at higher levels of capacity, and if so by what amount.

sufficiently clear idea, I suggest, to make it intelligible without much explanation what one might mean by phrases like "enhancing musical ability", "enhancing abstract reasoning ability" etc.

It is considerably more difficult to characterize what would count as emotional enhancement. Some instances are relatively straightforward. Most would readily agree that helping a person who suffers from persistent suicidal depression as the result of a simple neurochemical imbalance so that she once again becomes capable of enjoyment and of taking an interest in life would be to help her improve her

emotional capacities. Yet beyond cases involving therapeutic interventions to cure evident psychopathology it is less clear what would count as an enhancement. One's assessment of such cases often depends sensitively on the exact nature of one's normative beliefs about different kinds of possible emotional constitutions and personalities.

It is correspondingly difficult to say what would constitute a "posthuman" level of emotional capacity. Nevertheless, people often do strive to improve their emotional capacities and functionings. We may seek to reduce feelings of hate, contempt, or aggression when we consciously recognize that these feelings are prejudiced or unconstructive. We may take up meditation or physical exercise to achieve greater calm and composure. We may train ourselves to respond more sensitively and empathetically to those we deem deserving of our trust and affection. We may try to overcome fears and phobias that we recognize as irrational, or we may wrestle with appetites that threaten to distract us from what we value more. Many of us expend life-long effort to educate and ennoble our sentiments, to build our character, and to try to become better people. Through these strivings, we seek to achieve goals involving modifying and improving our emotional capacities.

An appropriate conception of emotional capacity would be one that incorporates or reflects these kinds of goal, while allowing perhaps for there being a wide range of different ways of instantiating "high emotional capacity", that is to say, many different possible "characters" or combinations of propensities for feeling and reacting that could each count as excellent in its own way. If this is admitted, then we could make sense of emotional enhancement in a wide range of contexts, as being that which makes our emotional characters more excellent. A posthuman emotional capacity would be one which is much more excellent than that which any current human could achieve unaided by new technology.

One might perhaps question whether there are possible emotional capacities that would be *much* more excellent than those attainable now. Conceivably, there might be a maximum of possible excellence of emotional capacity, and those people who currently have the best emotional capacities might approach so closely to this ideal that there is not enough potential left for improvement to leave room for a posthuman realm of emotional capacity. I doubt this, because aside from the potential for fine-tuning and balancing the various emotional sensibilities we already have, I think there might also be entirely new psychological states and emotions that our species has not evolved the

neurological machinery to experience, and some of these sensibilities might be ones we would recognize as extremely valuable if we became acquainted with them.

It is difficult intuitively to understand what such novel emotions and mental states might be like. This is unsurprising, since by assumption we currently lack the required neurological bases. It might help to consider a parallel case from within the normal range of human experience. The experience of romantic love is something that many of us place a high value on. Yet it is notoriously difficult for a child or a prepubescent teenager to comprehend the meaning of romantic love or why adults should make so much fuss about this experience. Perhaps we are all currently in the situation of children relative to the emotions, passions, and mental states that posthuman beings could experience. We may have no idea of what we are missing out on until we attain posthuman emotional capacities.

One dimension of emotional capacity that we can imagine enhanced is subjective well- being and its various flavors: joy, comfort, sensual pleasures, fun, positive interest and

excitement. Hedonists claim that pleasure is the only intrinsic good, but one need not be a hedonist to appreciate pleasure as one important component of the good. The difference between a bleak, cold, horrid painful

world and one that is teeming with fun and exciting opportunities, full of delightful quirks and lovely sensations, is often simply a difference in the hedonic tone of the observer. Much depends on that one parameter.

It is an interesting question how much subjective well-being could be enhanced without sacrificing other capacities that we may value. For human beings as we are currently constituted, there is perhaps an upper limit to the degree of subjective well-being that we can experience without succumbing to mania or some other mental unbalance that would prevent us from fully engaging with the world if the state were indefinitely prolonged. But it might be possible for differently constituted minds to have experiences more blissful than those that humans are capable of without thereby impairing their ability to respond adequately to their surroundings. Maybe for such beings, gradients of pleasure could play a role analogous to that which the scale ranging between pleasure and pain has for us.[28] When thinking the possibility of *posthumanly happy* beings, and their psychological properties, one must abstract from contingent features of the human psyche. An experience that would consume us might perhaps be merely "spicy" to a posthuman mind.

It is not necessary here to take a firm stand on whether posthuman levels of pleasure are possible, or even on whether posthuman

emotional capacities more generally are possible. But we can be confident that, at least, there is vast scope for improvements for most of individuals in these dimensions because even within the range instantiated by currently exiting humans, there are levels of emotional capacities and degrees of subjective well-being that, for most of us, are practically unattainable to the point of exceeding our dreams. The fact that such improvements are eagerly sought by many suggests that if posthuman levels were possible, they too would be viewed as highly attractive.[29]

5. Structure of the argument, and further supporting reasons

It might be useful to pause briefly to reflect on the structure of the argument presented so far. I began by listing three general central capacities (healthspan, cognition, and emotion), and I defined a posthuman being as one who has at least one of these capacities in a degree unattainable by any current human being unaided by new technology.

I offered some plausibility arguments suggesting that it could be highly desirable to have posthuman levels of these capacities. I did this partly by clarifying what having the capacities would encompass and by explaining how some possible objections would not apply because they rely on a misunderstanding of what is proposed. Furthermore, I tried to show

that for each of the three capacities we find that many individuals actually desire to develop the capacities to higher levels and often undertake great effort and expense to achieve these aims. This desire is also reflected in social spending priorities, which devote significant resources to e.g. healthspan- extending medicine and cognition-improving education. Significantly, at least in the cases of healthspan extension and cognitive improvement, the persons best placed to judge the value and desirability of incremental improvements at the high end of the contemporary human capacity distribution seem to be especially likely to affirm the desirability of such additional improvements of capacity. For many cognitive faculties, it appears that the marginal utility of improvements *increases* with capacity levels. This suggests that improvements beyond the

[28] **(Pearce 2004).**

[29] **The quest for subjective well-being, in particular, seems to be a powerful motivator for billions of people even though arguably none of the various means that have been attempted in this quest has yet proved very efficacious in securing the goal (Brickman and Campbell 1971).**

current human range would also viewed as desirable when evaluated by beings in a better position to judge than we currently are.

That people desire X does not imply that X is desirable. Nor does the fact that people find X

desirable, even when this judgment is shared among those who are in the best position to judge the desirability of X, prove that X is desirable or valuable. Even if one were to assume some version of a dispositional theory of value, it does not follow from these premises that X is valuable. A dispositional theory of value might assert something like the following: X is valuable for A if and only if A would value X if A were perfectly rational, perfectly well-informed, and perfectly acquainted with X.[30] The people currently best placed to judge the desirability for an individual of enhancement of her general central capacities are neither perfectly rational, nor perfectly well-informed, nor perfectly acquainted with the full meaning of such enhancements. If these people were more rational or obtained more information or became better acquainted with the enhancements in question, they would perhaps no longer value the enhancements. Even if everybody judged becoming posthuman as desirable, it is a logical possibility that becoming posthuman is not valuable, even given a theory of value that defines value in terms of valuing-dispositions.

The argument presented in the preceding sections is not meant to be deductive. Its ambition is more modest: to remind us of the plausibility of the view that (1) enhancements along the three dimensions discussed are possible in principle and of significant potential

intrinsic value, and (2) enhancements along these dimensions large enough to produce posthuman beings could have very great intrinsic value. This argument is defeasible. One way in which it could be defeated would be by pointing to further information, rational reasoning, or forms of acquaintance, not accounted for by current opinion, and which would change current opinion if it were incorporated. Critics could for example try to point to some reasoning mistake that very old people commit when they judge that it would be good for them to live another year in perfect health. However, I think the considerations I have pointed to provide prima facie evidence for my conclusions.

There are other routes by which one could reach the position that I have advocated, which supports the above arguments. For instance, one might introspect one's own mind to determine whether being able to continue to live in good health longer, being able better to understand the world and other people, or being able more fully to enjoy life and to react with appropriate affect to life events would seem like worthwhile goals for oneself if they were obtainable.[31] Alternatively, one might examine whether having these capacities to an enhanced or even posthuman degree could enable one to realize states and life paths that would have great value according to one's

favorite theory of value. (To me, both these tests deliver affirmative verdicts on (1) and (2).)

Yet another route to making the foregoing conclusions plausible is by considering our current ignorance and the vastness of the as-yet unexplored terrain. Let S_H be the "space" of possible modes of being that could be instantiated by someone with current human capacities. Let S_P be the space of possible modes of being that could be instantiated by someone with posthuman capacities. In an intuitive sense, S_P is enormously much larger than S_H. There is a larger range of possible life courses that could be lived out during a posthuman lifespan than during a human lifespan. There are more thoughts that could be thought with posthuman cognitive capacities than with human capacities (and more musical structures that could be created and appreciated with posthuman musical capacities etc.). There are more mental states and emotions that could be experienced with posthuman emotional faculties than with human ones. So why, apart from a lack

[30] See e.g. (Lewis 1989).

[31] See e.g. (Bostrom 2005).

of imagination, should anybody suppose that the S_H already contains all the most valuable and worthwhile modes of being?

An analogy: For as long as anybody remembers, a tribe has lived in a certain deep

and narrow valley. They rarely think of what lies outside their village, and on the few occasions when they do, they think of it only as a mythical realm. One day a sage who has been living apart from the rest, on the mountainside, comes down to the village. He explains that he has climbed to the top of the mountain ridge and from there he could see the terrain stretching far away, all the way to the horizon. He saw plains, lakes, forests, winding rivers, mountains, and the sea. Would it not be reasonable, he says, in lieu of further exploration, to suppose that this vast space is likely to be home to natural resources of enormous value? – Similarly, the sheer size and diversity of S_P is in itself a prima facie reason for thinking that it is likely to contain some very great values.[32]

6. Personal identity

Supposing the previous sections have succeeded in making it plausible that being a posthuman could be good, we can now turn to a further question: whether becoming posthuman could be good *for us*. It may be good to be Joseph Haydn. Let us suppose that Joseph Haydn had a better life than Joe Bloggs so that in some sense it is better to be Haydn and living the life that Haydn lived than to be Bloggs and living Bloggs' life. We may further suppose that this is so from Bloggs' evaluative standpoint. Bloggs might recognize that on all the objective criteria which he thinks makes for

a better mode of being and a better life, Haydn's mode of being and life are better than his own. Yet it does not follow that it would be good for Bloggs to "become" Haydn (or to become some kind of future equivalent of Haydn) or to live Haydn's life (or a Haydn-like life). There are several possible reasons for this which we need to examine.

First, it might not be possible for Bloggs to become Haydn without ceasing to be Bloggs. While we can imagine a thought experiment in which Bloggs' body and mind are gradually transformed into those of Haydn (or of a Haydn-equivalent), it is not at all clear that personal identity could be preserved through such a transformation. If Bloggs' personal identity is essentially constituted by some core set of psychological features such as his memories and dispositions, then, since Haydn does not have these features, the person Bloggs could not become a Haydn-equivalent. Supposing that Bloggs has a life that is worth living, any transformation that causes the person Bloggs to cease to exist might be bad for Bloggs, including one that transforms him into Haydn. Could a current human become posthuman while remaining the same person, or is the case like the one of Bloggs becoming Haydn, the person Bloggs necessarily ceasing to exist in the process? The case of becoming posthuman is different in an important respect. Bloggs would have to lose all the psychological

characteristics that made him person Bloggs in order to become Haydn. In particular, he would have to lose all his memories, his goals, his unique skills, and his entire personality would be obliterated and replaced by that of Haydn. By contrast, a human being could retain her memories, her goals, her unique skills, and many important aspects of her personality even as she becomes posthuman. This could make it possible for personal identity to be preserved during the transformation into posthuman.[33]

It is obvious that personal identity could be preserved, at least in the short run, if posthuman status is achieved through radical healthspan enhancement. Suppose that I learnt that tonight after I go to bed, a scientist will perform some kind of molecular therapy on my cells

[32] **(Bostrom 2004).**

[33] **See also (DeGrazia 2005). DeGrazia argues that identity-related challenges to human enhancement largely fails, both ones based on considerations of personal identity and ones based on narrative identity (authenticity), although he mainly discusses more moderate enhancements than those I focus on in this paper.**

while I'm sleeping to permanently disable the aging processes in my body. I might worry that I would not wake up tomorrow because the surgery might go wrong. I would *not* worry that I might not wake up tomorrow because the surgery succeeded. Healthspan enhancement

would help*preserve* my personal identity. (If the psychological shock of discovering that my life-expectancy had been extended to a thousand years were so tremendous that it would completely remold my psyche, it is possible that the new me would not be the same person as the old me. But this is not a necessary consequence.[34])

Walter Glannon has argued that a lifespan of 200 years or more would be undesirable because personal identity could not be persevered over such a long life.[35] Glannon's argument presupposes that personal identity (understood here as a determinant of our prudential concerns) depends on psychological connectedness. On this view, we now have prudential interests in a future time segment of our organism only if that future time segment is psychologically connected to the organism's present time segment through links of backward-looking memories and forward-looking projects and intentions. If a future time segment of my brain will not remember anything about what things are like for me now, and if I now have no projects or intentions that extend that far into the future, then that future time segment is not part of my person. Glannon asserts that these psychological connections that hold us together as persons could not extend over 200 years or so.

There are several problems with Glannon's argument, even if we accept his metaphysics of

personal identity. There is no reason to think it impossible to have intentions and projects that range over more than 200 years. This would seem possible even with our current human capacities. For example, I can easily conceive of exciting intellectual and practical projects that may take me many hundreds of years to complete. It is also dubious to assume that a healthy future self several hundred years older than I am now might would be unable remember things from current life stage. Old people often remember their early adulthood quite well, and it is not clear that these memories always decline significantly over time. And of course, the concern about distant future stages being unable to remember their earlier stages disappears completely if we suppose that enhancements of memory capacity becomes available.[36] Furthermore, if Glennon was right, it would follow that it is "undesirable" for a small child to grow up, since adults do not remember what it was like to be a small child and since small children do not have projects or intentions that extend over time spans as long as decades. This implication would be counterintuitive. It is more plausible that it can be desirable for an agent to survive and continue to develop, rather than to die, even if psychological connections eventually become attenuated. In the same way, it could be desirable for us to acquire the capacity to have a posthuman healthy lifespan, even if we could

not remain the same person over time scales of several centuries.

The case that personal identify could be preserved is perhaps less clear-cut with regard to radical cognitive or emotional enhancement. Could a person become radically smarter, more musical, or come to possess much greater emotional capacities without ceasing to exist? Here the answer might depend more sensitively on precisely which changes we are envisaging, how those changes would be implemented, and on how the enhanced capacities would be used. The case for thinking that both personal identity and narrative identity would be preserved is arguably

[34] **It is not even a psychologically plausible consequence even within the limitations of current human psychology. Compare the case to that of a man on death row who has a remaining life-expectancy of 1 day. An unexpected pardon suddenly extends this to 40 years – an extension by a factor of 14,610! He might be delighted, stunned, or confused, but he does not cease to exist as a person. If he did, it would presumably be*bad* for him to be pardoned.**

Even if one believed (erroneously in my view) that mortality or aging were somehow essential features of the persons we are, these features are consistent with vastly extended healthspan.

[35] **(Glannon 2002).**

[36] **It is clear that in order for an *extremely* long life to not become either static or self-repeating, it would be necessary that mental growth continues.**

strongest if we posit that (a) the changes are in the form of addition of new capacities or enhancement of old ones, without sacrifice of preexisting capacities; and (b) the changes are implemented gradually over an extended period of time; (c) each step of the transformation process is freely and competently chosen by the subject; and (d) the new capacities do not prevent the preexisting capacities from being periodically exercised; (e) the subject retains her old memories and many of her basic desires and dispositions; (f) the subject retains many of her old personal relationships and social connections; and (g) the transformation fits into the life narrative and self-conception of the subject. Posthuman cognitive and emotional capacities could in principle be acquired in such a way that these conditions are satisfied.

Even if not all the conditions (a)-(g) were fully satisfied in some particular transformation process, the normatively relevant elements of a person's (numerical or narrative) identity could still be *sufficiently* preserved to avoid raising any fundamental identity-based objection to the prudentiality of undergoing such a transformation. We should not use a stricter standard for technological self-transformation than for other kinds of human transformation, such as migration, career change, or religious conversion.

Consider again a familiar case of *radical* human transformation: maturation. You currently possess vastly greater cognitive capacities than you did as an infant. You have also lost some capacities, e.g. the ability to learn to speak a new language without an accent. Your emotional capacities have also changed and developed considerably since your babyhood. For each concept of identity which we might think has relevant normative significance – personal (numerical) identity, narrative identity, identity of personal character, or identity of core characteristics – we should ask whether identity in that sense has been preserved in this transformation.

The answer may depend on exactly how we understand these ideas of identity. For each of them, on a sufficiently generous conception of the identity criteria, identity was completely or in large part preserved through your maturation. But then we would expect that identity in that sense would also be preserved in many other transformations, including the ones that are *no more profound* as that of a child growing into an adult; and this would include transformations that would make you posthuman. Alternatively, we might adopt conceptions that impose more stringent criteria for the preservation of identity. On these conceptions, it might be impossible to become posthuman without wholly or in large part disrupting one form of identity or another.

However, on such restrictive conceptions, identity would also be disrupted in the transformation of child into adult. Yet we do not think it is bad for a child to grow up. Disruptions of identity in those stringent senses form part of a normal life experience and they do not constitute a disaster, or a misfortune of any kind, for the individual concerned.

Why then should it bad for a person to continue to develop so that she one day matures into a being with posthuman capacities? Surely it is the other way around. If this had been our usual path of development, we would have easily recognized the failure to develop into a posthuman as a misfortune, just as we now see it as a misfortune for a child to fail to develop normal adult capacities.

Many people who hold religious beliefs are already accustomed to the prospect of an extremely radical transformation into a kind of posthuman being, which is expected to take place after the termination of their current physical incarnation. Most of those who hold such a view also hold that the transformation *could* be very good for the person who is transformed.

7. Commitments

Apart from the concern about personal identity, there is a second kind of reason why it might be bad for a Bloggs to become a Haydn. Bloggs might be involved in various projects,

relationships, and may have undertaken commitments that he could not or would not fulfill if he became Haydn. It would be bad for Bloggs to fail in these undertakings if they are important to him. For

example, suppose that Mr. Bloggs is deeply committed to Mrs. Bloggs. His commitment to Mrs. Bloggs is so strong that he would never want to do anything that contravenes any of Mrs. Bloggs' most central preferences, and one of her central preferences is that Mr. Bloggs not become posthuman. In this case, even though becoming posthuman might in some respects be good for Mr. Bloggs (it would enable him to understand more, or to stay healthy longer, etc.) it might nevertheless be bad for him all things considered as it would be incompatible with fulfilling one of the commitments that are most important to him.[37]

This reason for thinking that it might be bad for a person to become posthuman relies on the assumption that it can be very bad for a person to forfeit on commitments that would be impossible to fulfill as a posthuman.[38] **Even if we grant this assumption, it does not follow that becoming a posthuman would necessarily be bad for us. We do not generally have commitments that would be impossible to fulfill as posthumans. It may be impossible for Mr. Bloggs to become posthuman without violating his most important commitment (unless, of**

course, Mrs. Bloggs should change her mind), but his is a special case.

Some humans do not have any commitments of importance comparable to that of Mr. Bloggs to his wife. For such people the present concern does not apply. But even for many humans who do have such strong commitments, becoming posthuman could still be good for them. Their commitments could still be fulfilled if they became posthuman. This is perhaps clearest in regard to our commitments to projects and tasks: most of these we could complete – indeed we could complete them better and more reliably – if we obtained posthuman capacities. But even with regard to our specific commitments to people, it would often be possible to fulfill these even if we had much longer healthspans or greatly enhanced cognitive or emotional capacities.

8. Ways of life

In addition to concerns about personal identity and specific commitments to people or projects, there is a third kind of reason one might have for doubting that it could be good for us to become posthuman. This third kind of reason has to do with our interpersonal relations more broadly, and with the way that the good for a person can be tied to the general circumstances and conditions in which she lives. One might think that the very concept of a good life for a human being is inextricably wound up in the idea of flourishing within a

"way of life" – a matrix of beliefs, relationships, social roles, obligations, habits, projects, and psychological attributes outside of which the idea of a "better" or "worse" life or mode of being does not make sense.

The reasoning may go something like this: It would not be good for a clover to grow into a rhododendron, nor for a fly to start looking and behaving like a raven. Neither would it, on this view, be good for a human to acquire posthuman capacities and start living a posthuman life. The criterion for how well a clover is doing is the extent to which it is succeeding in realizing its own particular nature and achieving the natural "telos" inherent in the clover kind; and the equivalent might be said of the fly. For humans, the case may be more complicated as there is a greater degree of relevant individual variation among humans than among other species. Different

[37] **We may include under this rubric any "commitments to himself" that Mr. Bloggs might have. For example, if he has a firm and well-considered desire not to become posthuman, or if he has solemnly sworn to himself never to develop any posthuman capacities, then it could perhaps on grounds of these earlier desires or commitments be bad for Mr. Bloggs to become posthuman.**

[38] **One may also hold that a person in Mr. Bloggs' situation has additional reasons for not becoming posthuman that don't rely on it being worse for him to become posthuman. For instance, he might have moral reasons not to become posthuman even if it**

would be good for him to become one. Here I am concerned with the question whether it would necessarily be bad *for* Bloggs to become posthuman, so any moral reasons he might have for declining the transition would only be relevant insofar as they would make the outcome worse *for Mr. Bloggs*.

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humans are pursuing different "ways of life", so that what counts as flourishing for one human being might differ substantially from what counts as such for another. Nevertheless, as we are all currently pursuing human ways of life, and since what is good for us is defined by reference to our way of life, it is not the case for any human that it would be good for her to become posthuman. It might be good for posthumans to be posthumans, but it would not be good for humans to become posthuman.

This third concern seems to be a conglomerate of the two concerns we have already discussed. Why could it not be good for a human to become posthuman? One possible reason is if her personal identity could not be preserved through such a transformation. The comparison with the clover appears to hint at this concern. If a clover turned into a rhododendron, then the clover would presumably cease to exist in the process. If a fly started looking and behaving like a raven, would it still be a fly? So part of what is going on here seems to be that the assertion that the relevant form of identity

could not be preserved in the transformations in question. But we have already addressed this concern insofar as it pertains to humans becoming posthuman.

There might be more at stake with this third concern than identity. The problem with a clover becoming a rhododendron is not just that the clover might cease to exist in the process, but that it seems a mistake to think that being a rhododendron is in any sense better than being a clover. There might be external criteria of evaluation (such as economic or aesthetic value to the human owner) according to which a rhododendron is better or more valuable than a clover. But aside from such extrinsic considerations, the two plants seem to be on a par: a thriving clover thrives just as much as a thriving rhododendron, so if the good for a plant is to thrive then neither kind is inherently better off or has a greater potential for realizing a good life than the other. Our challenger could claim that the same holds vis-à-vis a human and a posthuman.

I think the analogy is misleading. People are not plants, and the concept of a valuable mode of being for a person is fundamentally different from that of the state of flourishing for a plant. In a metaphorical sense we can ascribe interests to plants and other non-sentient objects: this clover "could use" some water; that clock "needs" winding up; the squeaky

wheel "would benefit" from a few drops of oil. Defining interests relative to a functionalist basis might be the only way we can make sense of these attributions. The function of the clock is to indicate the time, and without being wound up the clock would fail to execute this function; thus it "needs" to be wound up. Yet sentient beings may have interests not only in a metaphorical sense, based on their function, but in a quite literal sense as well, based on what would be normatively good for them. A human being, for example, might have interests that are defined (partially) in terms of what she is actually interested in, or would be interested in given certain conditions.[39] So from the fact that we could not make sense of the claim that it would be good for a clover to become a rhododendron, it does not follow that we would similarly be unable to make sense of the claim that it would be good for a human to become a posthuman. Even if the successful execution of "the function" of a human were not facilitated by becoming posthuman, there would be other grounds on which one could sensibly attribute to a human an interest in becoming posthuman. It is at any rate highly problematic that something as complex and autonomous as a human being has any kind of well-defined "function". The problem remains even if we relativize the function to particular ways of life or particular individuals. We might say that the function of the farmer is to farm, and that of the

singer is to sing, etc. But any particular farmer is a host of other things as well: e.g. a singer, a mother, a sister, a homeowner, a driver, a television watcher, and so forth *ad infinitum*. Once she might have been a hairdresser; in the future she might become a shopkeeper, a golfer, a person with a disability, a transsexual, or a posthuman. It is difficult to see how any strong normative conclusions could be drawn from the fact that she currently occupies a certain set of roles and serves a certain set of functions. At most we could conclude that when and insofar as she acts as a farmer, she ought to tend to her crops or livestock; but from

[39] **Cmp. dispositional theories of value, discussed above.**

the fact that she is a farmer, nothing follows about whether she ought to be or remain a farmer. Likewise, the most we could conclude from the fact that she is currently a human person is that she ought to do things that are good for humans – brush her teeth, sleep, eat, etc. – but only so long as she remains human. If she became a posthuman who did not need to sleep, she would no longer have any reason so sleep. And the fact that she currently has a reason to sleep is not a reason for her not to become a sleepless posthuman.

At this point, an objector could attempt an alternative line of argumentation. Maybe there are some crucial interests that we have that are

not conditional on us occupying particular social roles or having particular personal characteristics or serving particular functions. These interests would be unlike our interest in sleep, which does not provide us with a reason not to change in such a way that we no longer need to sleep. Rather these unconditional ("categorical") interests would be such as to give us reason not to change in ways that would make us no longer have those interests. I have already admitted that individuals can have such interests, and in some cases this might make it the case for some possible individuals that it would not be good for them to become posthuman. I discussed this above as the "second concern". This is not a problem for my position since it is compatible with it being true for other individuals (and perhaps for the overwhelming majority or even all actual human persons) that it could be good for them to become posthuman. But our hypothetical objector might argue that there are certain categorical interests we all have *qua* humans. These interests would somehow derive from human nature and from the natural ends and ideals of flourishing inherent in this essential nature. Might not the existence of such universally shared categorical human interests invalidate the thesis that it could be good for us to become posthuman?

9. Human nature

Let us consider two different candidate ideas of what a human "telos" might be.
If we seek a telos for human individuals within a naturalistic outlook, one salient candidate would be the maximization of that individual's inclusive fitness. Arguably, the most natural way to apply a functional characterization of a human individual from an evolutionary perspective is as an inclusive fitness maximizer (tuned for life in our ancestral environment). From this perspective, our legs, our lungs, our sense of humor, our parental instincts, our sex drive and romantic propensities subserve the ultimate function of promoting the inclusive fitness of an individual. Now if we define the telos of a human individual in this way, as vehicle for the effective promulgation of her genes, then many of the seemingly most attractive posthuman possibilities would be inconsistent with our successfully realizing this alleged telos, in particular those possibilities that involve radical alteration of the human genome. (Replacing our genes with other genes does not seem to be an effective way to promulgate the genes we have.) As a conception of the human good, however, the telos of maximizing inclusive fitness is singularly lacking in plausibility. I do not know of any moral philosopher who advocates such a view. It is too obvious that what is good for a person can, and usually does, diverge from what would maximize that person's inclusive

fitness.[40] Those who attempt to derive a theory of the human good from the telos inherent in a conception of human functioning will need to start from some conception of human functioning other than the evolutionary one. One starting point that has had more appeal is the doctrine that a human being is essentially a rational animal and that the human telos is the development and exercise of our rational faculties. Views of this sort have a distinguished pedigree that can be traced back at least to Aristotle. Whatever the merits of this view, however, it is plainly not a promising objection to

[40] For example, for a contemporary man the life plan that would maximize inclusive fitness might be to simply donate as much sperm to fertility clinics as possible.

the claims I advance in this paper, since it would be perfectly possible for a posthuman to realize a telos of rationality as well as a human being could. In fact, if what is good for us is to develop and exercise our rational nature, this implies that it would be good for us to become posthumans with appropriately enhanced cognitive capacities (and preferably with extended healthspan too, so that we may have more time to develop and enjoy these rational faculties).

One sometimes hears it said that it is human nature to attempt to overcome every limit and to

explore, invent, experiment, and use tools to improve the human condition.[41] I don't know that this is true. The opposite tendency seems to be at least as strong. Many a great invention was widely resisted at the time of its introduction, and inventors have often been viciously persecuted. If one wished to be provocative, one might even say that humanity has advanced technologically*in spite of anti-technological tendencies in human nature*, and that technological advancement historically has been due more to the intrinsic utility of technological inventions and the competitive advantages they sometimes bestow on their users than to any native preference among the majority of mankind for pushing boundaries and welcoming innovation.[42] Be that as it may; for even if it were "part of human nature" to push ever onward, forward, and upward, I do not see how anything follows from this regarding the desirability of becoming posthuman. There is too much that is thoroughly unrespectable in human nature (along with much that is admirable), for the mere fact that X is a part of human nature to constitute any reason, even a prima facie reason, for supposing that X is good.

11. Brief sketches of some objections and replies

Objection: **One might think that it would be bad for a person to be the only posthuman being**

since a solitary posthuman would not have any equals to interact with.
Reply: It is not necessary that there be only one posthuman.
I have acknowledged that capacities may not have basic intrinsic value and that the contribution to well-being that having a capacity makes depends on the context. I suggested that it nevertheless makes sense to talk of the value of a capacity in a sense similar to that in which we commonly talk of the value of e.g. money or health. We can take such value ascriptions as assertions that the object or property *normally* makes a positive contribution to whatever has basic value. When evaluating posthuman attributes, the question arises what we should take to be the range of circumstances against which we assess whether something "normally" makes a positive contribution. As we do not have a concrete example in front of us of a posthuman civilization, there is a certain indeterminacy in any assertion about which things or attributes would "normally" make a positive contribution in a posthuman context. At this point, it may therefore be appropriate to specify some aspects of the posthuman context that I assume in my value-assertions. Let me here postulate that the intended context is one that includes a society of posthuman beings.
41 **The quest for posthuman capacities is as old as recorded history. In the earliest preserved epic, the**

Sumerian *Epic of Gilgamesh* (approx. 1700 B.C.), a king sets out on a quest for immortality. In later times, explorers sought the Fountain of Youth, alchemists labored to concoct the Elixir of Life, and various schools of esoteric Taoism in China strove for physical immortality by way of control over or harmony with the forces of nature. This is in addition to the many and diverse religious traditions in which the hope for a supernatural posthuman existence is of paramount importance.

[42] As J.B.S. Haldane wrote: "The chemical or physical inventor is always a Prometheus. There is no great invention, from fire to flying, which has not been hailed as an insult to some god. But if every physical and chemical invention is a blasphemy, every biological invention is a perversion. There is hardly one which, on first being brought to the notice of an observer from any nation which has not previously heard of their existence, would not appear to him as indecent and unnatural." (Haldane 1924).

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What dialectical constraints are there on what I am allowed to stipulate about the posthuman context? The main cost to making such stipulations is that if I end up defining a gerrymandered "posthuman context", which is also extremely unlikely ever to materialize, then the significance of any claims about what would normally be valuable in that context would tend to wane. It is simply not very interesting to know what would "normally" be valuable in some utterly bizarre context defined by a large number of arbitrary stipulations. I do not think

that by postulating a society of posthumans I am significantly hollowing out my conclusions. I do, in fact, assume throughout this paper more generally that the postulated posthuman reference society is one that is adapted to its posthuman inhabitants in manners similar to the way current human society is adapted to its human inhabitants.[43] I also assume that this reference society would offer many affordances and opportunities to its posthuman inhabitants broadly analogous to those which contemporary society offers humans. I do not intend by this postulation to express any prediction that this is the kind of posthuman society that is most likely to form, nor do I mean to imply that being a posthuman could not be valuable even outside of the context of such a kind of society. The postulation is merely a way of delimiting the claims I am trying to defend in this paper.

Objection: **The accumulated cultural treasures of humanity might lose their appeal to somebody whose capacities greatly exceeded those of the humans who produced them. More generally, challenges that seemed interesting to the person while she was still human might become trivial and therefore uninteresting to her when she acquires posthuman capacities. This could deprive posthumans of the good of meaningful achievements.**

Reply: It is not clear why the ability to appreciate what is more complex or subtle

should make it impossible to appreciate simpler things. Somebody who has learnt to appreciate Schoenberg may still delight in simple folk songs, even bird songs. A fan of Cézanne may still enjoy watching a sunrise.

Even if it were impossible for posthuman beings to appreciate some simple things, they could compensate by creating new cultural riches. I am assuming that the reference society would offer opportunities for doing this – see above.

If some challenges become too easy for posthumans, they could take on more difficult challenges. One might argue that an additional reason for developing posthuman cognitive capacities is that it would increase the range of interesting intellectual challenges open to us. At least within the human range of cognitive capacity, it seems that the greater one's capacity, the more numerous and meaningful the intellectual projects that one can embark on. When one's mind grows, not only does one get better at solving intellectual problems – entirely new possibilities of meaning and creative endeavor come into view.

Objection: **A sense of vulnerability, dependence, and limitedness can sometimes add to the value of a life or help a human being grow as a person, especially along moral or spiritual dimensions.**

Reply: A posthuman could be vulnerable, dependent, and limited.

A posthuman could also be able to grow as a person in moral and spiritual dimensions without those extrinsic spurs that are sometimes necessary to affect such growth in humans. The ability to spontaneously develop in these dimensions could be seen as an aspect of emotional capacity.

Objection: **The very desire to overcome one's limits by the use of technological means rather than through one's own efforts and hard work could be seen as expressive of a failure to open**

[43] **But I do not assume that the reference society would only contain posthuman beings.21**

oneself to the unbidden, gifted nature of life, or as a failure to accept oneself as one is, or as self- hate.[44]

Reply: This paper makes no claims about the expressive significance of a desire to become posthuman, or about whether having such a desire marks one as a worse person, whether necessarily or statistically. The concern here rather is about whether being posthuman could be good, and whether it could be good for us to become posthuman.

Objection: **A capacity obtained through a technological shortcut would not have the same value as one obtained through self-discipline and sacrifice.**

Reply: I have argued that the possession of posthuman capacities could be extremely valuable even were the capacities are effortlessly obtained. It is consistent with what I

have said that achieving a capacity through a great expenditure of blood, sweat, and tears would further increase its value. I have not addressed what would be the *best* way of becoming posthuman. We may note, however, that is unlikely that we *could* in practice become posthuman other than via recourse to advanced technology.

Objection: **The value of achieving a goal like winning a gold medal in the Olympics is reduced and perhaps annulled if the goal is achieved through inappropriate means (e.g. cheating). The value of possessing a capacity likewise depends on how the capacity was acquired. Even though having posthuman capacities might be extremely valuable if the capacities had been obtained by appropriate means, there are no humanly possible means that are appropriate. Any means by which humans could obtain posthuman capacities would negate the value of having such capacities.**

Reply: The analogy with winning an Olympic medal is misleading. It is in the nature of sports competitions that the value of achievement is intimately connected with the process by which it was achieved. We may say that what is at stake in the analogy is not really the value of a medal, nor even the value of winning a medal, but rather (something like) winning the medal by certain specified means in a fair competition, in a non-fluke-like way, etc. Many other goods

are not like this. When we visit the doctor in the hope of getting well, we do not usually think that the value of getting well is strongly dependent on the process by which health is achieved; health and the enjoyment of health are valuable in their own right, independently of how these states come about. Of course, we are concerned with the value of the means to getting well – the means themselves can have negative value (involving perhaps pain and inconvenience), and in evaluating the value of the consequences of an action, we take the value of the means into account as well as the value of the goal that they achieve. But usually, the fact that some means have negative value does not reduce the value of obtaining the goal state.

One possible exception to this is if the means are in a certain sense *immoral*. We might think that a goal becomes "tainted", and its value reduced, if it was achieved through deeply immoral means. For example, some might hold that the value of medical findings obtained by Nazi doctors in concentration camps have reduced or no value because of the way the findings were produced. Yet this radical kind of "taint" is a rather special case.[45] Having to use bad means might be good reason not to pursue a goal, but *typically* this is not because the use of bad means

[44] **Cmp. (Sandel 2004), although it is not clear that Sandel has an expressivist concern in mind.**

[45] Even in the Nazi doctor example, it is plausibly the *achievement* of the doctors (and of Germany etc.) that is tainted, and the *achievement's* value that is reduced. The value of the *results* is arguably unaffected, although it might always be appropriate to feel uncomfortable when employing them, appropriate to painfully remember their source, regret the way we got them, and so forth.

would reduce the value of the attainment of the goal, but rather it is either because the means themselves have more negative value than the goal has positive value, or (on a non-consequentialist view) because it is morally impermissible to use certain means independently of the total value of the consequences.[46]

The values that I have alleged could be derived from posthuman capacities are not like the value of an Olympic gold medal, but rather like the value of health. I am aware of no logical, metaphysical, or "in principle" reason why humans could not obtain posthuman capacities in ways that would avoid recourse to immoral means of the sort that would "taint" the outcome (much less that would taint the outcome to such a degree as to annul its extremely high surplus value). It is a further question to what extent it is *practically feasible* to work towards realizing posthuman capacities in ways that avoid such taint. This question lies outside the scope of the present paper. My conclusion may therefore be understood to

implicitly contain the proviso that the posthuman capacities of which I speak have been obtained in ways that are non-Faustian.

Objection: **Posthuman talent sets the stage for posthuman failure. Having great potential might make for a great life if the potential is realized and put to some worthwhile use, but it could equally make for a tragic life if the potential is wasted. It is better to live well with modest capacities than to life poorly with outstanding capacities.**

Reply: We do not lament that a human is born talented on grounds that it is possible that she will waste her talent. It is not clear why posthuman capacity would be any more likely to be wasted than human capacity. I have stipulated that the posthuman reference society would offer affordances and opportunities to its posthuman inhabitants broadly analogous to those that contemporary society offers humans. If posthumans are more prone to waste their potential, it must therefore be for internal, psychological reasons. But posthumans need not be any worse than humans in regard to their readiness to make the most of their lives.[47]

12. Conclusion

I have argued, first, that some posthuman modes of being would be extremely worthwhile; and, second, that it could be good for most human beings to become posthuman.

I have discussed three general central capacities – healthspan, cognition, and emotion

– separately for most of this paper. However, some of my arguments are strengthened if one considers the possibility of combining these enhancements. A longer healthspan is more valuable when one has the cognitive capacity to find virtually inexhaustible sources meaning in creative

[46] It might help to reflect that we do not deny the value of our current human capacities on grounds of their evolutionary origin, even though this origin is (a) largely not a product of human achievement, and (b) fairly drenched in violence, deceit, and undeserved suffering. People who are alive today also owe their existence to several thousands of years of warfare, plunder, and rape; yet this does not entail that our capacities or our mode of existence is worthless.

Another possibility is that the result has positive value X, the way you get it has negative value Y, but the "organic whole" comprising both the result and the way it was obtained has an independent value of its own, Z, which also might be negative. On a Moorean view, the value of this situation "on the whole" would be X+Y+Z, and this might be negative even if X is larger than (–Y) (Moore 1903). Alternatively, Z might be incommensurable with X+(–Y). In either case, we have a different situation than the one described above in the text, since here X could invariant under different possible ways in which the result was obtained. However, I do not know of any reason to think that this evaluative situation, even if axiologically possible, would necessarily obtain in the sort of case we are

discussing. (I'm indebted to Guy Kahane for this point.)

[47] If they have enhanced emotional capacity, they may be *more* motivated and more capable than most humans of realizing their potential in beautiful ways.

endeavors and intellectual growth. Both healthspan and cognition are more valuable when one has the emotional capacity to relish being alive and to take pleasure in mental activity.

It follows trivially from the definition of "posthuman" given in this paper that we are not posthuman at the time of writing. It does not follow, at least not in any obvious way, that a posthuman could not also remain a human being. Whether or not this is so depends on what meaning we assign to the word "human". One might well take an expansive view of what it means to be human, in which case

"posthuman" is to be understood as denoting a certain possible type of human mode of being – if I am right, an exceedingly worthwhile type.[48]

MARCH 1, 2018

Real Life Cyborg Body Hacks That People Are Doing Right Now

ANATOMY, HACKING, TECHNOLOGY

by Pauli Poisuo

We're not exactly beginners when it comes to awesome sensory hacks, but we're not

what you'd call "experts," either. There are people out there who like them at least as much as we do, to the point that they've started *physically* hacking their own bodies with technology, in order to gain an edge over the usual human limitations. Are their methods awesome or downright terrifying? We've gone over these entries a dozen times each, and we still can't decide.

PATREON | 

The Eyeball Camera

Have you ever been in one of those situations where something hilarious or beautiful happened, and you think, "Damnit, I wish I would have recorded that?" Shooting video is easier than it's ever been, but sometimes, you're just not fast enough to whip out the phone and hit the record button before you've missed your opportunity to catch children flipping through the air like juggling clubs.

If you're filmmaker Rob Spence, you could make sure your camera is always at the

ready by straight-up replacing your eyeball with one.

Spence happened to have a blind eye taking up prime real estate in his socket, so he had it removed, replacing it with a specially built camera. If you think these are the actions of a man destined to gradually turn into a Terminator, the picture we're about to show ... really, *really* isn't going to make you feel any different.



Yes, *of course* he's calling his modification "The Eyeborg Project". We don't know why you even bothered asking.

Once you get past the creepiness factor, the Eyeborg camera is actually a pretty sweet piece of gear. It's a perfectly functional video camera that can basically

turn your life into a POV feed. Also, it's not wired to your brain or anything, so if you get tired of it, you can just remove it and go with the badass eye patch.

The Downside:

Remember Google Glass? The high-tech eyewear people hated so hard that Google had to bury it until AR technology may or may not turn it relevant again? There's a reason it bombed, and it had a lot to do with buttheads who were now able (and *absolutely willing*) to take pictures with little regard to anyone's privacy.

This is basically that, but embedded in your face.



"Surprise! There's a camera here and a camera h- where are you going?"

Social norms notwithstanding, there are some significant disadvantages to turning your eye into a camera. Having to lose an eye to install an eye-cam can obviously be a bit of a deal-breaker, and even if you currently happen to be boasting a spare eye socket, well, the camera-eye isn't quite as aesthetically pleasing as you might think. Seriously, only click that link if you're prepared to see a guy with a bunch of high tech LEGO bricks where the eye should be.

It's not like you can just leave that sweet-ass red light on to mask the true awfulness of the Eyeborg, either. The video camera overheats after just 3 minutes of use, which we're guessing isn't the best user experience for a piece of technology currently lodging in your face.

Finger Magnets

Picking up objects with the power of magnetism seems like a power reserved exclusively for comic book characters, but

aspiring body modifiers see it as a challenge. Of course, the simplest way to add that power to your repertoire is to implant tiny magnets in your fingertips. Duh.



Dude's a true pinball wizard.

Unfortunately, this plan didn't quite work out as intended. While it is possible to use

magnets to carry small knick knacks, doing it regularly causes the skin that gets pinched between the magnet and the object to die, and your body rejects the magnet.

However, much like how Viagra started out as heart medication, finger magnets went on to bigger and better things when people discovered that they give their owners *a brand new sense*: The magnets cause the fingers to tingle whenever they're in the vicinity of a magnetic field, such as those generated by microwave ovens, speakers or anti-theft gateways.

The Downside:

You're not about to terrorize the X-Men with these. In fact, your hands are far more likely to terrorize you. According to this less than proud owner of magnetic finger implants, they're annoying as hell. After all, it's 2018: Magnetic fields generated by machines are pretty much everywhere, so your implant is basically going to buzz non-stop, right in your fingertips and their countless nerve endings.



And that's just the physical discomfort. The magnets are *probably* not strong enough to strip the stripes of your credit cards, but then again, this person describes how she sometimes accidentally demagnetizes her hotel key cards. And there's also the question of, "What if you need an MRI?" We don't know the answer to that, but we're pretty sure it's not "you become Magneto."

An Arm That Detects Earthquakes

A Catalan artist called Moon Ribas has an implant in her arm, giving her the ability to

sense every earthquake that happens on the planet.

She mostly uses this superpower for performance art -- hey, being ahead of your time doesn't necessarily mean you have the faintest idea of what to do with your skills. Her interpretative dance show is called *Waiting for Earthquakes*, and it's specifically created around the earthquake implant. Basically, she stands motionless until she senses one, and then starts dancing. Her movements depend on the sensation the implant gives her, as the location and intensity of the quake are projected on a screen behind her.



"Not an earthquake. That was me. My bad. I'm so sorry."

The Downside:

Hey, do you know how many earthquakes there are every day? Around 50, counting all the tiny microquakes that humans can't even feel (but the implant very much can). This means that your arm would buzz roughly every 10 minutes, and ... that's pretty much it. You don't get an indication of the scale of the quake, or even its direction, until you check the information from the online seismograph the implant is connected to (at the point where this information is already available to anyone). If you were a superhero, you'd be called "Captain Something Is Happening Somewhere And It May Or May Not Be Dangerous," and your superpower would be the total inability to do anything about it.



She might not be the hero we want. But she's the hero we need.

To be fair, Ribas is aware of the limitations and, as of 2016, was planning to implant new sensors that enable her to tell the proximity of the earthquake. Going a step further, she also plans on getting sensors that help her sense moonquakes. She just needs to convince NASA to give her access to their satellite data in order to enhance her sick dance moves, or maybe acquire a moonquake sensor satellite of her own. How hard can *that* be?

Multi-Purpose Hand Implant Chips

Keys, E-Z pass devices, passports, credit cards, children ... if you've never lost at least one of these a dozen times over, you are not human. But what if you could always store your valuables close at hand? Close *in* hand, in fact. If you believe the Seattle company, Dangerous Things, a

small [multi-purpose RFID implant] can replace it all -- and you'll never lose it, provided your limbs stay where they're supposed to.



OK, if they look exactly like that, we're ordering them all.

The RFID chips that you implant in your hand or wrist, are a sort of multipurpose identification/unlocking/communication tool. Need to open your door? It can function as a key card -- the inventor of the device, biohacking pioneer Amal Graafstra, uses his implant to unlock the door to his house. Passport control? The implant can contain the same information biometric passports do (though good luck getting through airport security without a real passport until these things become the norm). It could store yo**Humans must**

become cyborgs if they are to stay relevant in a future dominated by artificial intelligence. That was the warning from Tesla founder Elon Musk, speaking at an event in Dubai this weekend.

Musk argued that as artificial intelligence becomes more sophisticated, it will lead to mass unemployment. "There will be fewer and fewer jobs that a robot can't do better," he said at the World Government Summit.



Actors, teachers, therapists – think your job is safe from artificial

intelligence? Think again

Read more

If humans want to continue to add value to the economy, they must augment their capabilities through a "merger of biological intelligence and machine intelligence". If we fail to do this, we'll risk becoming "house cats" to artificial intelligence.

And so we enter the realm of brain-computer (or brain-machine) interfaces, which cut out sluggish communication middlemen such as typing and talking in favour of direct, lag-free interactions between our brains and external devices.

The theory is that with sufficient knowledge of the neural activity in the brain it will be possible to create "neuroprosthetics" that could allow us to communicate complex ideas telepathically or give us additional cognitive (extra memory) or sensory

(night vision) abilities. Musk says he's working on an injectable mesh-like "neural lace" that fits on your brain to give it digital computing capabilities.

So where does the science end and the science fiction start?

ur personal data, health stats, and even *financial information*.

It cannot, however, store children. Sorry to have insinuated that earlier.

The Downside:

It's DIY. Meaning, they want you to install the chip, yourself. It's only the size of a rice grain and they *do* sell the kit for it, but still ... expecting you to just shove your combined keys, ID and multipurpose communication chip inside your body and not nick a vein or accidentally cut your entire arm off seems like the kind of customer service that would make cable companies proud.



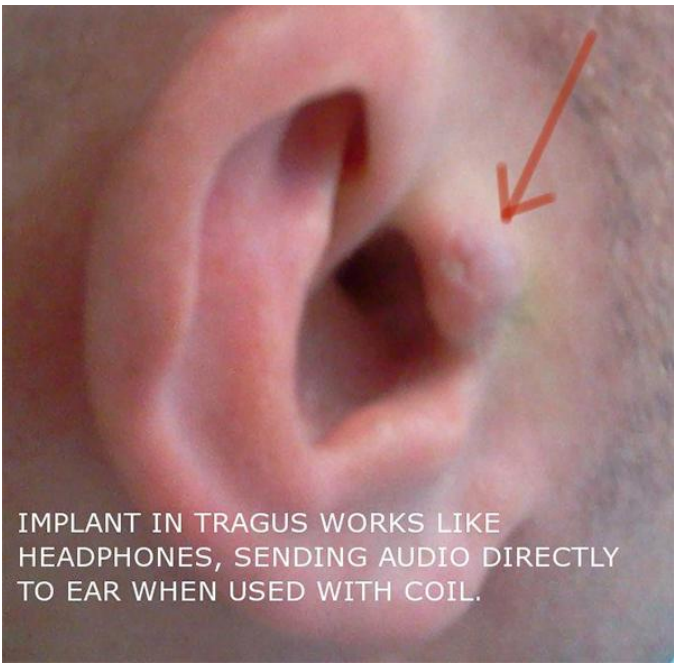
"Well, crap. I know yours is in here somewhere."

Of course, it doesn't help matters that RFID chips can be hacked pretty easily. This is decidedly *not* what we mean when we talk about body hacking.

Headphone Implants

We're sick and tired of constantly losing our headphones, and companies aren't exactly making things easier by stubbornly insisting that their ear buds be wireless. If only there was a way to make sure we can't lose them ever again. Super glue, maybe? Or we could take things one step further and employ the method used by

Rich Lee: Surgically implant magnets directly into your ears and turn them into headphones that you'll always carry with you.
Yes, really.



The magnet-headphones don't work by themselves. Instead, they use electromagnetic induction, which means that Lee needs to wear a coil necklace contraption whenever he wants to use them (see video below).

To listen to music, he needs to plug his phone in the jack, which sends a current through an amplifier to the coil necklace made of copper magnet wiring. The wire coil generates a magnetic field that corresponds to the music, and the magnet implants react to that by moving gently. This vibrates the air nearest to his eardrum, and since sound is just vibrating air, Lee's eardrum and brain interpret this as sound. Here's Lee showing how it works on his YouTube channel:

He can also use the contraption as a stethoscope of sorts by listening to people's heartbeats with a contact microphone attachment. He's also dabbling with directional mics that will allow him to listen to conversations across the room. Even *echolocation* is in the cards somewhere down the line.

The Downside:

Is this cool? Totally. Is it complicated as hell? Absolutely, especially as the actual sound quality is barely comparable to a set of cheap ear buds. Besides, that coil necklace defeats the whole point of

subdermal hearing implants, as well as the very concept of coolness. You might as well glue puka shells to it and call it a day. Still, as soon as he can figure out the echolocation thing, count us right in! Well, at least once they figure out how to get an actual medical professional to perform the procedure. Lee just had his done by a body modification artist, which ... doesn't seem like the safest way to acquire a whole new sense.

Similarities between Lil Miquela and British model Emily Bador (shown below).



73% 5:56 PM

QUIZ

What Will You Be Famous For?

Your 15 minutes are coming.

Posted on August 22, 2014, at 12:48 p.m.



Arianna Rebolini
BuzzFeed Staff



Choreograph / ThinkStock

Share Pin

Share Pin

72% 5:58 PM

What Famous Internet Cat Are You?

A personality quiz where there are no wrong answers, because all these kitties are the best. Discover your true inner-celebricat.

Posted on October 10, 2012, at 1:33 p.m.



Summer Anne Burton
BuzzFeed Staff

If you had a million dollars, what would you spend it on?



1000 different awesome $1,000 things on my wish-list.

I would put it in savings and let it collect interest, so that I would never have to work (or wake up before noon) again.

I already have a million dollars.

This is a stupid question.

They have a larger online following than Oprah Winfrey or Obama, yet you might not know their name. These are Chinese celebrities with the most fans on Sina Weibo. A top 10 overview by What's on Weibo. While American pop stars Justin Bieber and Katy Perry are the leaders of Twitter in terms of followers, there are celebrities with an equally large fanbase on China's biggest social media platform Weibo – although these are names that are less well-known outside of China. Many of the names in this updated list also appeared in our 2015 list of Weibo's biggest celebrities, but some things have changed over the past 1,5 years. For one, Chinese actress Xiena has skyrocketed from the fourth to the first place, as she gained an astonishing 18 million (!) fans within a relatively short time frame. The 28-year-old 'AngelaBaby' is new to the list. Although she already started her acting career back in 2007, she has become especially popular over the past few years, along with another newcomer to this top 10, Yang Mi. One of the reasons why four big names have exited this list, including the super popular actress Fan Bingbing, is not necessarily that they are not popular anymore, but just that the numbers of followers for other popular stars on Weibo have increased so dramatically. In 2015, our 'number 10' had 38 million fans on Weibo;

now the last name in this list has an incredible 66 million followers. These numbers show the heightened popularity of Sina Weibo as a social media platform over the past year. Having been predicted to be 'on its way out' some time ago, Weibo has actually seen a huge revival in in 2016. What is noteworthy about this list is that it does not contain any 'internet celebrities' (网红 wanghong), meaning people who have become self-made online influencers through the internet, for which Weibo has become known over the past 1-2 years. One example is comedian Papi Jiang, who became famous by posting funny videos of herself. Nevertheless, the biggest Weibo stars are still the 'traditional celebrities' in the sense that they have made their big breakthrough through TV or cinema. Many of them simply have become so big on Weibo because they were among the first celebrities to join the platform since its beginning in 2009. Big names in this list, including Yao Chen, Chen Kun, and Guo Degang, already had over 54 million followers on the platform in 2013. Here we go with our updated list of Weibo's biggest stars of 2017: 1. Xie Na 谢娜 90.485.623 followers. The absolute number one this list is the 'Queen of Weibo' Xie Na (1981), also nicknamed 'Nana' – an extremely popular Chinese singer, actress and designer. One of the

reasons she has become so famous in mainland China is that she is the co-host of Happy Camp (快乐大本管), which is one of China's most popular variety TV shows. She presents the show together with, amongst others, colleague He Jiong, who is the number two in this list. Xie Na stars in many popular Chinese films and television series. She has also released several albums, founded a personal clothing line, and published two books. Before getting married to Chinese singer Zhang Jie, Xie Na was in a 6-year relationship with her Happy Camp colleague Liu Ye. Xiena made headlines in March 2017, becoming #1 trending topic on Weibo, when she announced she would go to Italy as an overseas student to study design.

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Ghost in the Shell's Original Director Mamoru Oshii Doesn't See Scarlett Johansson's Casting As Whitewashing

By Hunter Harris

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Scarlett Johansson. Photo: Paramount Pictures

Paramount's adaptation of *Ghost in the Shell* caught flack when Scarlett Johansson was cast as the live-action adaptation's lead character, a robot named Motoko Kusanagi. Now, Mamoru Oshii, the director of the original anime adaptation of *Ghost in the Shell,* said that he has no problem with Johansson playing a role many have understood to be an Asian woman. His reasoning? *Ghost in the Shell*'s main character is a cyborg with no fixed form or race, he explained to IGN, so he doesn't consider Johansson's casting as Hollywood whitewashing. "What issue could there possibly be with casting her? The Major is a cyborg and her physical form is an entirely

assumed one. The name 'Motoko Kusanagi' and her current body are not her original name and body, so there is no basis for saying that an Asian actress must portray her," he told IGN via email. "Even if her original body (presuming such a thing existed) were a Japanese one, that would still apply." Instead, Oshii says he's satisfied with Johansson's casting, and that he would prefer the live-action adaptation offer a new perspective on Masamune Shirow's original *Ghost in the Shell* manga.

Jettzen Shea has a mop of pale blond hair and a voice that rings out like a little bell as he chimes in from the middle rows of Claremont McKenna College's Pickford Auditorium. "I'm on Twitter," he says. He's just shy of age 10, and his claim to fame is a brief part on the TV show Chicago Fire. His seat looks as though it might

swallow him up at any second. “When I go on a show or movie, my mom — well of course after the movie airs, otherwise you're gonna get in trouble — she posts a picture of the cover of the movie or the show.”

Next to him, another boy pipes up. “I use [social media] for every time I'm on my way to an audition. I start posting stuff on social media and Twitter, and then right after I make a YouTube video.”

These two young social prodigies aren’t alone. Around the room, kids are volunteering their favorites kinds of social media. YouTube and Snapchat are big, but Instagram is bigger. One girl proclaims that she is “sooo over Facebook” and a few others agree. On the auditorium stage, Michael Buckley is diligently taking mental notes. He paces and nods. He quips in response to each child’s answers and offers fatherly advice: don’t get tattoos of the YouTube play button like he did. Make good choices on Snapchat. And, as the conversation takes a more earnest tone, he sagely tells the group that you get back what you put in.

"It doesn't matter if you make a million dollars

or have a billion followers," Buckley says. "That's great, but [there are] life skills you're gonna learn, and you learn so much. This is your first business, as a YouTuber. This is your brand. You're an entrepreneur by nature."

The chattering pauses and the phones are put away. He has their attention.

This is the inaugural year for SocialStar Creator Camp, an offshoot of an actor camp that takes place every summer near LA. It's three days of intensive influencer workshops focusing on monetization, branding, and the basics of shooting and editing video, all aimed at kids in their early teens to mid-20s. At first, the idea sounds like the recipe for a reality TV show. You'd expect to see kids clinging to their phones like a lifeline, or parading around filming everything. The reality was a group of surprisingly business-minded teens with an eye on their futures.

In its first outing, the group — over a dozen, with kids from the main actor camp occasionally popping in — skew on the younger side. At one point, when asked about how old the entire group was in 2005, the answers that come back

the loudest are “four” or “five,” but a few older kids are present, too. The campers have come from across the US and abroad: Virginia, Mississippi, Colorado, but also Puerto Rico and Sweden.

The camp promotes itself as a sleepaway experience for “rising social media creators.” In bold red letters, its website shouts, “You can be the next big social media star!” It leans heavily into the allure of viral fame and fortune with the gusto of an internet ad promising you the ability to make money from home.

Nichelle Rodriguez, who worked with the young actors in years prior, says that motivation for the new camp came from the kids themselves. “Interest kept circling back to social media,” she tells The Verge. Kids who came to learn about acting wanted to understand how to use social media to their advantage, while kids gunning for pure social fame wanted to improve their camera skills. Throughout the camp, Rodriguez and a few others refer to a Daily Mail article claiming that 75 percent of kids want to be YouTubers. And while venues like YouTube and Twitch have created ways for aspiring stars to circumvent gatekeepers like agents and auditions, social

fame presents challenges of its own. “I knew that there had to be a program that really focused on that creator, helping one grow and build on the skill set,” Rodriguez says.

After a year and a half of discussions with parents, kids, and established creators, the program Rodriguez developed was largely technical: classes on monetization or editing videos. She turned to Michael Buckley, an experienced YouTube personality who helped shape the syllabus, to host.

“[IF] YOU TOLD SOMEBODY THAT YOU WERE MAKING ONLINE VIDEOS, THEY ASSUMED YOU WERE DOING PORNOGRAPHY.”

Buckley seems more than up to the task. With a stylish fade haircut and boundless energy and enthusiasm, he’s exactly the kind of mascot a social media camp needs. Onstage, Buckley speaks at microphone volume, with or without the device in hand. He’s quick with jokes and up-to-date on pop culture, but instructs with a moral compass that feels akin to a hip high school teacher. As one of the first-day sessions ends, he conversationally brings up the latest news about Rob Kardashian and Blac Chyna —

a family drama that's been playing out on social media the last few days. Kardashian escalated the fight into morally despicable and legally fraught territory by posting nude photos of Blac Chyna on social media. As one teen claps in support of Kardashian, Buckley strikes a strict pose with his hands on his hips. "Why are you clapping?" he asks the boy sternly. The applause abruptly ends.

At 42, Buckley is what passes for an elder statesman in the world of social stardom. He's an experienced vlogger, host, comedian, and author who got his start over a decade ago, before being a YouTuber was considered a "legitimate" field. "[If] you told somebody that you were making online videos, they assumed you were doing pornography or something very shady," Buckley tells The Verge.

When interviewed by news outlets like CNN or Fox about being an online video creator, the tone was still tinged with judgement. "They seemed annoyed that that was such a thing. I remember Inside Edition came to my house in 2008 to do a piece on me, and the journalist was so annoyed that I was making hundreds of thousands of dollars a year. He was like, 'Do you have a

degree in journalism?' I was like, 'No.' He was like, 'How are you qualified to be broadcasting?'" Today, YouTube and other platforms have become far more common avenues to fame. "There are kids and adults making seven figures off of this and living their best lives," Buckley says.

But being an online creator isn't just a young person's game. There is no age limit to cultivating an audience, as long as you have the ambition and dedication. As YouTube ages, so, too, do the pioneers who started on the platform. While some, like Michelle Phan, have been able to build an entire empire off their YouTube following, others, like Grace Helbig, have been able to pivot to acting roles. Buckley himself plays a much more life coach-style role these days.

Because the camp is an offshoot of the actors program, many of these wannabe social stars are using this knowledge as a way to further their desired acting careers. They're young, but they have a business-like focus on their futures. "I'm hoping this will get me more information on how I can grow my pages so people can see my content," says one boy, a 15-year-old from

Mississippi who's recently taken to singing on his Instagram and YouTube channel.

"I've seen how well people can do using social media," says another, a 14-year-old girl from Oregon. "I wanted to discover it more."

Not all of the campers are new to fame. One, a 12-year-old girl known online as Angelic, is a talented singer with more than 880,000 subscribers on YouTube. Angelic skyrocketed to fame after her cover of Ariana Grande's "Problem." The video was posted when she was only nine. Today, it's racked up more than 32 million views. A few of the campers, as well as Buckley, recognized her. "You're very famous, aren't you?" Buckley asks her at the camp's start.

"Yeah, I guess," she says with a smile.

Regardless of their followings, many of the kids here are interested in learning how to do the same thing: vlogging. Vlogs can cover everything from life hacks, storytelling, and trips to the store. What the vlogger wants to cover is up to them. And because they tend to be of a more casual nature, kids can use the cameras on their

phones.

SocialStar Creator Camp emphasizes often that being a professional vlogger, a YouTuber, an influencer, is a fun pursuit, but the sessions themselves are largely devoted to the more serious side of it all. In one session, Buckley and the campers discuss branding: what handles they go by online, and how to improve their names. A kid who uses a double underscore in his handle is playfully called "Underscore" for the rest of the camp, which serves as both an affectionate nickname and a reminder to avoid cluttering up your name with symbols. A session on monetization teaches kids the basics of promoting brands as influencers, and the importance of supporting brands they like and use; each kid should consider themselves a tiny tastemaker for their audience. It wraps with the campers splitting off into groups and doing their best to create a video, tweet, and so on with brands they've made up. And a great deal of time is given to what goals the kids have, and where they want to end up.

Buckley talks about how vlogging is more than just a job. He believes it can be a force for good, and learning to be an influencer can build

character. “It's like going to soccer camp,” he says. “You might not play in the World Cup, but you're still learning the skills … [kids are] spending all their time looking at their phone anyway. They might as well be productive about it and get some skills out of it.” Learning how to market themselves, sticking to a schedule, being held accountable for their work — those, Buckley says, are great practices to get into. “Anything that [kids are] passionate about, to throw themselves into it, there is value in it. You might not go to the Olympics, you might not go to the NHL, you might not get 10 million subscribers, but there is value in competing and playing this game of social media.”

He considers being a YouTuber to be almost like working in public service: people share their stories about being LGBT, or how they grapple with mental health, and it helps others tackle and talk about their own issues. “This is saving lives,” Buckley says. “This is helping people be comfortable with themselves and identify their sexual orientation or identity easily and effortlessly and with no shame.

“When I was growing up, people didn't talk about depression or anxiety, and now all these

YouTubers talk about their struggles and it makes it ok to talk to your parents about it. It makes it okay to say, 'I'd like to talk to the counselor.'"

Of course, these videos have to entertain. Buckley encourages kids to think about how to make their titles engaging, click-worthy. He asks the room for some examples they've used before. When one girl offers up hers — "The day I almost died" — he bounces up and down with glee, repeating the title. "I'm cheering for your almost death," he jokes.

On Michael Buckley's last YouTube video from his channel BuckHollywood, posted May 15th, the comments are overwhelmingly positive. But scattered throughout are vicious personal attacks. "His voice is so fucking annoying," says one. "No one cares about you anymore," says another. Some use homophobic slurs.

Online abuse is an inevitable part of existing online, and the danger is higher the more prominent you become. Giving teenagers the tools and understanding to deal with these threats, both emotionally and practically, may be one of the biggest challenges the camp has to

face.

Buckley broaches this topic with a light touch. "Are you worried about online haters at all?" he asks. "Let 'em hate," one boy replies gamely. Buckley persists. Should people engage, or block? How would they handle it?

"I would just leave it," says a boy in his mid-teens. Buckley presses. "If somebody wrote, 'This kid is the biggest loser. He should kill himself' — do you believe that?" The responses are less confident. One camper asks if it's possible to just report harassing commenters.

"Yeah," Buckley says. "I just want you to have a scenario in your head when you get these comments of what would you do?" He encourages the kids to delete the comment, block the perpetrator, and report the experience using whatever platform tools are available. "If somebody writes something constructive like, 'I don't really like this video,' okay," he says. "If somebody writes something derogatory and threatening, that's when I'm nervous. Especially when there's kids. Sometimes people start writing home addresses or 'I'm gonna come to your house and do whatever.' I just want to

make sure you understand there's a ban button. There's a report button. And do not engage with those types of people."

Buckley's presentation is a brief overview of practical anti-doxxing advice: don't give home tours or include photos of a residence; check into locations after you've left them, rather than while you're still there. Some of his advice is more psychological. "Whenever you read something, keep this in your head: don't let the praise go to your head, don't let the hate go to your heart. That is life advice. It is always about them. It is never about you. I really don't want you to ever read something and think badly about yourself. I certainly don't want that to discourage you from posting. The more successful you get, the more they will hate on you."

These kids probably aren't dealing with this kind of vitriol yet, but he's seen it affect popular YouTubers before. "They go into this depression and they don't post for a month," he says. "I'm telling you to get ahead of the game right now."

For good measure, the campers also get a

lengthy talking to about online safety by an LAPD officer. In theory, the idea is a good one, but it gets to the heart of the difficulties of teaching kids the intricacies of the web, as well as the shortcomings of adults talking about social media. The LAPD officer's presentation is a series of slides on DDOS attacks, laws, and VPNs, peppered with frequent self-deprecating commentary on his age. "I know a little bit about social media," detective Andy Kleinick says as introduces himself. A gray, grizzled, stocky officer, he launches into a explanation of the laws surrounding unauthorized access online, as well as password protection. "You're protected online by the law, but it's a very difficult law to enforce," Kleinick says. For anyone familiar with victims of harassment and the difficulties they face, it's a heartbreaking understatement.

"THEY GO INTO THIS DEPRESSION AND THEY DON'T POST FOR A MONTH."

As Kleinick waxes on about social engineering, corporations having their email compromised, and the recent WannaCry ransom attack, heads are drooping left and right. "A lot of people think hacking is just some nerd in a room with hot pockets and Doritos and Mountain Dew, sitting there all night typing code," he says. "Those aren't the hackers. Hackers are nice

when you talk to them, people you see every day, sometimes someone who works with you, goes to school with you." A boy sitting near the front rubs his face.

He puts up 15 of the most popular social media sites. Facebook sits at the top. "Old grandpas like me still use it," he says. "It's still huge." Other sites include Instagram, Reddit, LinkedIn, Meetup, and Vine.

A tiny child in the crowd raises his hand. "Did you know Vine got disabled?" he asks, stumbling over the last word. "Vine is dead!" yells another.

"I don't think it's going to survive," Kleinick agrees.

"It's been dead!" corrects a kid. Kleinick quickly moves on.

His talk becomes more intense as it progresses, touching on real-life tragedies like the bullying and subsequent suicide of Megan Meier to illustrate his point. But though Kleinick is speaking to a room full of hopeful social stars, he struggles to reach them with advice that feels helpful. A great deal of time is given to

dissuading the group from taking nude photos, including having the kids repeat “the internet is forever.” (This advice is directed largely at the young women in the room, despite recent studies that found about half of women ages 18–29 are victims who receive “explicit images they did not ask for.”) His advice lacks serious steps kids can take to protect themselves in their public messaging. "You can do whatever you want. If you don't hurt anybody, you can do whatever you want,” he says. “You could be huge, and you could make a ton of money.

“But just remember that when you're lying on your deathbed, and you don't think of your deathbed when you're 15 years old, you're never going to think ‘I wish I made a million more dollars.’ You're never going to think that. You're going to think, ‘God I wish I spent more time with my family. I wish I spent more time with my friends.’”

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