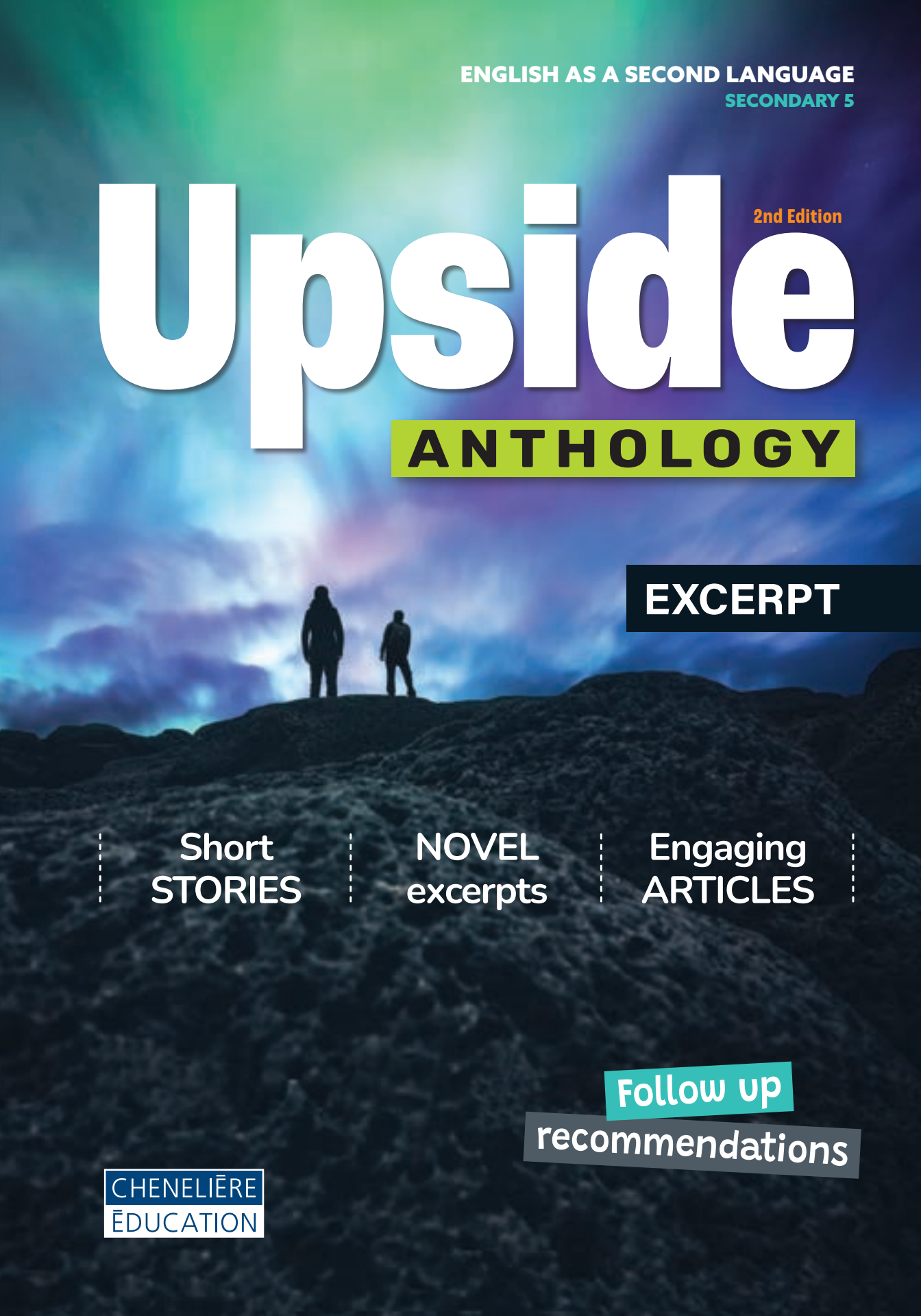
ENGLISH AS A SECOND LANGUAGE
SECONDARY 5

Upside

2nd Edition

ANTHOLOGY

EXCERPT



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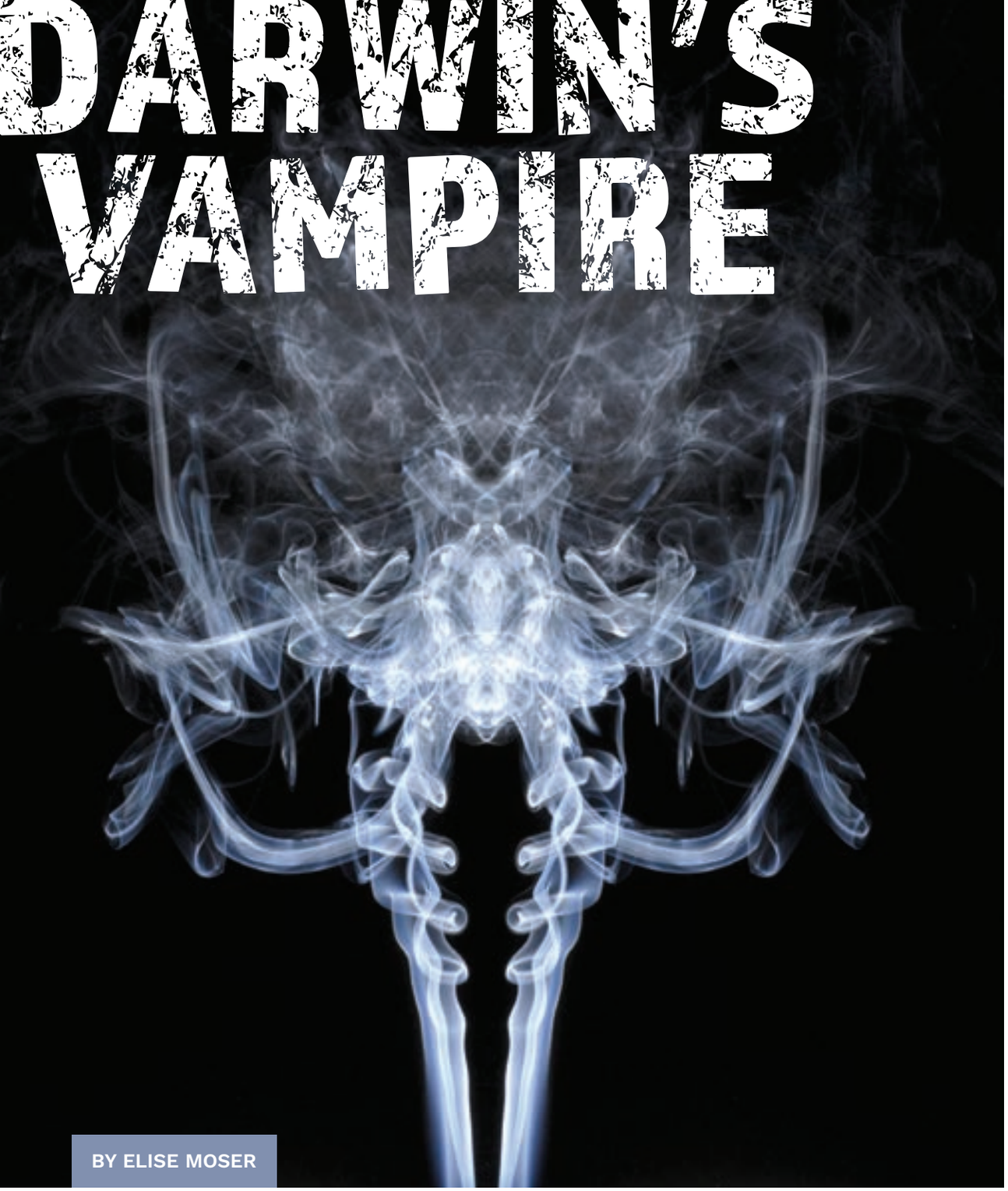


DARWIN'S VAMPIRE

BY ELISE MOSER

Imagine a fantastical near future where miniature vampires are as common as mosquitoes. What kind of medicine would the world need to treat their bites? In Unit 3, we looked at weird, controversial and experimental medicine. What other weird ailments will be treated by the weird medicine of the future?

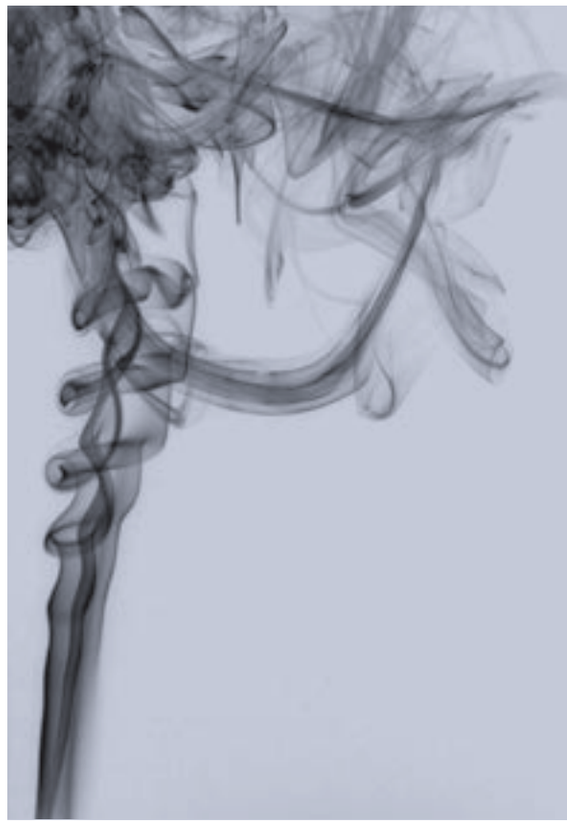
Carola was washing dishes, singing along with the radio, and didn't see the vampire until it had landed on her wrist, but then it was too late; she'd already felt the sting. She smacked at the vamp with her other hand and suds flew everywhere. She peered around, but it must have flown off. There were two bright red dots of blood beginning to **well up** in the centre of a pinkish **welt** just beside her wrist bone. "Darn it," she muttered.

She held her wrist up, while, with the other hand, she pulled open the kitchen junk drawer and **rummaged** for the VampStop. There was masking tape, a Baggie full of twist-ties, a plastic fork. Where was it? She heard a faint buzzing, but her hand was starting to throb and she knew she didn't have time to look around; she needed to apply the VampStop within a minute or it would have no effect. She started tossing things onto the counter. A pencil with a broken end, the warranty from the coffee machine… she **expelled** a quick breath. There it was. The trademark blood-red applicator, there, at the back. It had been a while since there'd been a vampire around here; in the winter they usually liked to go south.

Carola pulled the tube out, and the cap fell off and rolled under the counter. Damn it, Greg never closed things properly. The spongy end of the applicator was bone dry. She frantically **dabbed** it at her puffed-up hand, but there was no moisture left at all. She hurled it onto the kitchen floor and ran to the bathroom, throwing open the medicine cabinet and sweeping everything from the shelf into the sink. There had to be another VampStop in here. Greg said that vampires were once as big as humans, but it seemed so unlikely. "Darwin's finches," he said, with that superior scientific air of his. There used to be a VampStop in here, Carola was sure of it. Her breath was starting to come in short gasps, close to **sobs**. She threw two lipsticks and a bottle of cough syrup into the bathtub. Where was it?

"Don't panic, don't panic," she **chanted** under her breath. Last summer when they were packing to go camping, she'd asked Greg to buy a fresh one for the trip, but he packed the one from the bathroom instead. *Darn it*. She fled to the front hallway. She had a mini in her purse. Why hadn't she just gone for that one right away? Her bitten hand was bright pink now, and radiating heat. She tore open her purse and **upended** it. There, right there—she grabbed it and tore the cap off with her teeth; she couldn't bend the fingers of her other hand at all now.

well up: come up or emerge
welt: painful raised mark
rummaged: searched quickly and carelessly
expelled: let out
dabbed: touched lightly
sobs: cries
chanted: repeated words
upended: turned over



> There were two spots on her shoulder blades that felt hot and sore and nubby; she wondered if she'd hurt herself somehow without knowing it...

She viciously **jabbed** the **spongy** end of the applicator at the **wound**, jabbing and jabbing until the mini VampStop was empty. Then she watched in horror as the liquid on her hand turned blue. Too late.

Carola sat on the floor in the hallway, slumped against the wallpaper, the contents of her purse strewn around her. Her brain was **foggy**, and her bones felt weirdly compressed. It was uncomfortable.

She'd miss Greg and his science stories. His favourite was about the finches on the Galapagos Islands. Carola remembered how, when they first fell in love, she and Greg used to sit in the dark and look at the pictures on his computer. The finches had all evolved different beaks—a large one, for eating hard seeds; a short one, for eating insects; a long, slender one, for feeding on cactus pulp. They developed so quickly that scientists could track the changes from generation to generation.

Carola's face was damp and itchy from dried tears, and her skin felt tight all over. She suddenly thought of the poster they used to have up in her Grade 5 classroom, an old-fashioned sign from the time of the Eradication, during her mum's childhood. It was a photograph of a grinning hunter holding the small head of a vamp, which he'd presumably just chopped off. The body, about the size of a cat, lay at his feet, stumpy wings crushed against its back.

Carola's mum used to tell them stories about when the vamps started flying in through the windows; by the time she was in high school, she said, they were as small as sparrows, and the Eradication almost ground to a halt because they were so hard to hunt. Then someone invented the electricity-field nets. The only vamps that survived were those small enough to pass through them. "That," Greg used to say at parties, "was an evolutionary leap." Carola sighed **wistfully**; he loved to lecture. "Devastating for the population," he'd **drone**, rocking back on his heels, "but an evolutionary leap." Then he'd go on about insect robotics, and aerospace engineering based on mosquito flight dynamics.

Carola noticed that the hall light fixture seemed very high up, the ceiling cavernous. The sound of passing traffic vibrated dully against the walls. She wondered if she should try to leave a note for Greg to tell him what happened, but everything was so far away. The prospect of finding a pen defeated her; she imagined herself carrying a **ballpoint** as tall as a log, and it just made her feel tired. There were two spots on her shoulder blades that felt hot and sore and **nubby**; she wondered if she'd hurt herself somehow without knowing it, maybe while she was flinging the contents of her bathroom around.

The cool **dimness** of the hallway was soothing. It occurred to her that her cell phone must be on the floor somewhere; she could call Greg. She forced herself to crawl through the large detritus from her handbag to look for it, but when she found it it was a huge thing, the size of a rowboat. She reached up and tried to press the button to unlock the keypad, but it wouldn't move. She thought she might be able to jump on it; she surprised herself by opening her stiff new wings, and, with a startling feeling of strength, lifted herself onto the phone, landing lightly on the asterisk key.

jabbed: poked with quick movements
spongy: soft and absorbent
wound: injury to the body
foggy: unclear
wistfully: do something sadly
drone: speak in a monotonous tone
ballpoint: pen
nubby: covered with bumps
dimness: with no light

Now that she was here, she found that she didn't want to phone Greg anymore. She was trying to remember why she'd wanted to before, when she heard a distant buzzing from the direction of the kitchen. Maybe it was that vamp again. She turned quickly, in time to see a dark spot flitting through the lighted doorway. As he flew closer Carola could make out his clean, sharp features. He approached, and the sound got clearer; she sensed it resonating in the vast space. Suddenly she realized that she could understand it in a whole new way. It wasn't buzzing at all—he was singing!

The vamp flew over and landed on the screen of Carola's cell phone, and the two of them stood and looked at each other for a moment. She found herself thinking that she would like to see Greg again after all. He'd always had a sort of meaty smell. She'd like to bite him. ■

DARWIN'S FINCHES

Darwin's finches refer to a group of 15 distinct species of birds that live on the Galapagos Islands in the Pacific Ocean. The most significant difference between the species is the size and shape of their beaks, which are highly adapted to their food source, mostly seeds and plants. One species is the vampire finch, which lives in dry areas. Vampire finches feed on parasites that live on the backs of animals such as tortoises and iguanas. They have a buzzing song. When times are particularly hard, the finches feed on the blood of seabirds. They are small enough that their feeding habits are not enough to kill the seabirds.

Exoskeleton that Allows Humans to Work and Play for Longer

BY JANE WAKEFIELD

Robotic exoskeletons are an innovative new technology that enables handicapped people to walk and move their limbs again. This technology has been featured in the media recently in films and television. It not only gives paralyzed people part of their mobility back, but also enhances our ability to work and play. In Unit 3, we looked at how medical advances can impact our lives. How do you see exoskeletons helping people and society in the future?

Would you put on an exoskeleton that meant you could run for an entire day without getting tired?

What about one that would allow you to stay on your feet longer at work?

The technology to give people superhuman strength is currently being developed, but the **ethical** questions, about whether we should be developing it and in what circumstances it should be used, are only just beginning to be asked.

An exoskeleton, as the name suggests, is an external frame that can be worn to support the body, either to help a person overcome an injury or to enhance their biological **capacities**. Powered by a system of electric motors, the frame gives limbs extra movement, strength, and endurance.

At the Massachusetts Institute of Technology's Biomechatronics Lab, researchers are working on exoskeletons that will work in far better harmony with the body.

Perfect Pianist

Ph.D. student Tyler Clites posed the scenario of a piano player who has developed arthritis.

In considering how technology could help this person regain their skills, he started asking if he could go even further.

"Why not go from a B piano player to an A++ piano player and be someone who can reach keys or create new types of sound patterns that no human has ever created before?" he asked the BBC on a visit to the lab.

"I find it very interesting that often as humans we are satisfied with where we are, with some **baseline** that we have set **arbitrarily**."

Using a technique they call *neuro-embodied design*, Mr. Clites's team is finding ways of extending the human nervous system into the synthetic world and vice versa.

At the centre of the laboratory is a **treadmill** fitted with devices that measure how much force is used when people walk or run. Above it are motion-capture cameras that work out exactly how people move their joints and muscles. The data helps them design a system to help people run or walk faster or more efficiently.

Today's exoskeletons are bulky but could be made far more compact, say researchers

The students want to push the boundaries of technology beyond what our current biological **frames** will allow. *Normal* seems to be something of a dirty word.

They refer to Prof. Hugh Herr, who runs the lab, as "their fearless leader."

"Hugh has expressed a dream, that I share, to strap on an exoskeleton and run through the wood at 20 miles per hour all day without getting tired," Mr. Clites told the BBC.

"That would be exhilarating and beautiful and a type of experience that humans aren't currently able to have."

However, exoskeletons are also being worked on "for nurses or waiters who are on their feet all day."

"Right now, someone can use a forklift to lift heavy materials but if they were able to wear an exoskeleton that allowed them to do the same thing, it would perhaps better connect them to the task they are performing," Mr. Clites said.

The hope is that the current big, bulky exoskeletons can be shrunk to the "form factor of a sneaker and associated shin guard" or even be contained within "high-performance clothing."

Ethical Questions

Prof. Noel Sharkey, co-founder for the Foundation for Responsible Robotics, is worried by the idea of technology that allows humans to work longer hours.

"You could have exoskeletons on building sites that would help people not get so physically tired but working longer would make you mentally tired and we

ethical: relating to moral principles
capacities: abilities
baseline: minimum starting point
arbitrarily: randomly, without any reason or system
treadmill: exercise machine with a continuous belt for walking or running
frames: supporting structures

Professor Hugh Herr

don't have a means of stopping that," he told the BBC.

"We design these systems and then ask whether it might be misused. We need ethical design from the start, and I would design exoskeletons that switch themselves off after six hours."

However, Mr. Clites does not want to limit the technology. "We don't stop building cars because some people will drive drunk," he told the BBC.

"We look at technology and think that if the benefits outweigh the risk for people to abuse it, then we are excited to go after the technology."

We need ethical design from the start.

Cyborg Ambitions

Prof. Hugh Herr believes we're entering a new era of human–machine **interoperability**.

Prof. Herr is a self-described "bionic man," thanks to the robotic legs designed by his team, following a mountain climbing accident in his teens that left him as a double amputee.

His legs have been through many iterations to get to their current high-tech standard.

"When I think about moving my legs, **neural** signals from my central nervous system pass through my nerves and activate muscles within my residual limbs," he explained in a TED talk earlier this year.

"Artificial electrodes sense these signals, and small computers in the **bionic** limb decode my nerve pulses into my intended movement patterns."

But, he added, he is "not yet a cyborg."

His friend—Jim Ewing—who also lost his lower leg in a climbing accident—had his damaged limb rebuilt by a team of surgeons, scientists and engineers assembled at MIT called Team Cyborg.

Surgeons connected muscles in his remaining leg in a way that allowed the nerves within them to continue sending information to the brain, helping his bionic foot work more naturally.

The engineers built the prosthetic to enable two-way communication, with signals travelling from his brain to his **residual** lower leg and into the bionic limb.

It allowed Mr. Ewing to again climb the mountain in the Cayman Islands where he had fallen but that is just the start of the journey, thinks Prof. Herr.

"I believe that the reach of neuro-embodied design will extend far beyond limb replacement and carry humanity into realms that will fundamentally redefine human potential," he said in his TED talk.

"In this 21st century, designers will extend the nervous system into powerfully strong exoskeletons that humans can control and feel with their minds." ■

interoperability: ability to work together
neural: relating to a nerve or to the nervous system
bionic: relating to artificial electromechanical body parts
residual: relating to what is remaining

Follow Up

1 ***Patch Adams*** **(1998), directed by Tom Shadyac,** FILM
Hunter "Patch" Adams is a doctor who wants to use joy and humour to treat patients in a field that has always been clinical and uncaring. Patients love him, but will the other medical professionals feel the same way about his unconventional methods?

2 ***Sawbones*** **(2013), by Dr. Sydnee McElroy and Justin McElroy,** PODCAST
Sydnee and Justin McElroy explore the weird, gross, and sometimes dangerous ways that medicine has been practised to the present day. From antiquated medical practices to unusual disorders, Sydnee provides her expertise as a practising doctor while Justin provides comedy to help discuss hard topics.

3 ***The Good Doctor*** **(2017),** SERIES
Dr. Shaun Murphy is a young surgeon in a prestigious hospital. Shaun has autism and Savant syndrome, which lets him visualize complex medical problems. Alone in the world due to his inability to connect with others, Shaun must overcome the skepticism and prejudices of the doctors and surgeons around him.

4 ***The Memory Book*** **(2017), by Lara Avery,** NOVEL
Sammie McCoy is determined to let nothing stand in her way, not even the rare genetic disorder slowly stealing her memories and health. To fight back, she creates the Memory Book, notes to her future self about all the big and small moments she experiences. Will she be able to use this to find joy in a life that seems determined to be forgotten?

5 ***Five Feet Apart*** **(2018), by Rachael Lippincott with Mikki Daughtry and Tobias Iaconis,** NOVEL
Stella Grant is determined to get back control over her life, even though her chronically ill lungs keep her frequently hospitalized and six feet apart from everyone, with no exceptions. Will Newman wants to get out of the hospital. For both to stay alive, they must stay apart, but can they steal back a little of the space their health has taken from them?