

ers from guessing passwords, it is not clear that the common practice of requiring regular password changing makes passwords or user credentials less vulnerable. The technical advantage of frequent password changes must be balanced against the effects on employee password behavior. For example, requiring frequent password changes may lead to work-arounds such as employees writing their passwords down on paper.

Finally, and most important, education is essential. Unintentional negligence remains the biggest risk; attacks often propagate through inadvertent employee behavior such as opening an e-mail attachment, clicking a link embedded in an e-mail message, or otherwise entering credentials through a phishing attack. Hospital staff may be unaware that they were targeted, and the ma-

ajority of breaches are discovered after the fact.¹ Regular employee training and education should be required for all members of the health care community. People are the weakest link in the security infrastructure: our systems are only as secure as the gatekeepers who use them.

Unfortunately, no system can guarantee complete security. As long as there is value in information, there will be attacks against the systems that secure it — information systems are fundamentally vulnerable. Nevertheless, if we acknowledge the public health implications of information security, we can improve dialogue, implement necessary protections, and minimize the impact on patient care.

Disclosure forms provided by the authors are available at NEJM.org.

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Man versus Nature — *Also Sprach Zarathustra* and an End-of-Life House Call

Maxwell M. Krem, M.D., Ph.D.

Tom has been my patient since my fellowship, and now he is dying. He has been a constant in my career journey as much as I have been in his treatment, for 5 years and more than 80 treatment cycles. As an oncology fellow, I told him of his diagnosis of colon cancer with lung and liver metastases. I have subjected him to hand-foot syndrome, chemotherapy-induced neuropathy, fatigue, oxaliplatin anaphylaxis, anemia, and steroid-induced psychosis. He has also endured a bowel obstruction, brain metastases, abscesses, and a myocardial infarction during the course

of therapy, but somehow he has persisted. The most recent setback is a baseball-sized metastatic tumor causing spinal cord compression, perhaps the final insult in the cavalcade of complications that Tom has faced.

Tom has invited me to his home for a final visit. My house call takes place on a windy, rainy Saturday in November. I drive south on the interstate; urban sprawl gives way to rural sprawl: outlet malls, truck stops, Subway franchises, billboard ads. I exit the highway and head east; the landscape mutates again as I pass farmhouses, wooden barns, graz-

ing cows, and a small, winding river that stubbornly refuses to abandon the road. I arrive at a house with a miscellaneous assortment of weathervanes guarding the porch, and I am welcomed in by Tom's son. Tom's current room has been decorated as a shrine to horses and the people who love them, but the central space is now occupied by a hospital bed, dressed with zebra-striped sheets in a nod to the prevailing decor.

I am permitted the rare privilege of blending into the scene with the rest of Tom's family. Tom shares stories of his life,

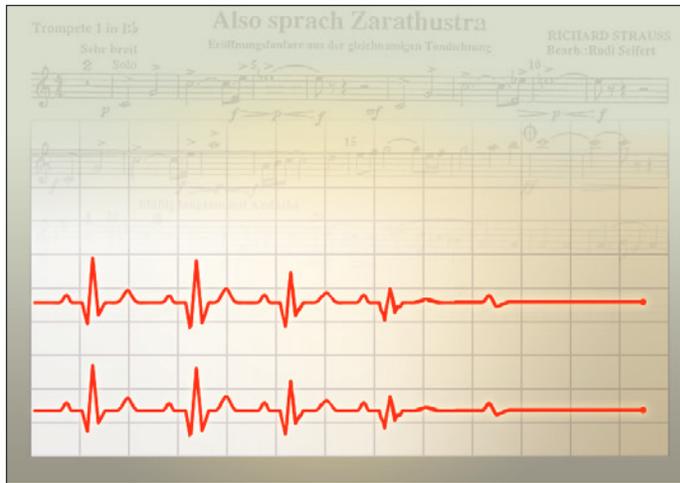
ranging from his experiences as a small-town auto mechanic to hair-raising tales of elk-hunting expeditions. His voice has not lost its energy, and its resonant baritone and sonorous timbre with a touch of country twang is just right for storytelling — and the secret of his success as a barrel-racing announcer. When we have a few moments to ourselves, he tells me he would have liked to be able to spend more time with his family, especially his grandson. He regrets leaving them “early,” his only misgiving about the inevitable end of his life.

We also have one final piece of medical business to address. He wishes to pursue the option afforded to him by our state’s death-with-dignity law. I have brought with me a form that will state, when it is completed, that I concur that Tom has a terminal illness, understands the consequences of his decision to end his life, and has not been coerced. His local physician, who makes house calls, has agreed to be the prescribing physician. This is not the service I have been hoping to provide. We had optimistically discussed plans for a few cycles of chemotherapy to see if we could slow the growth of the tumors to buy Tom more time. The chemo orders were signed, but we have been thwarted by yet another decline. My last chemo order for Tom will not be filled, since he instead seeks a peaceful exit from the life of a cancer patient.

When the time for my depart-

ture arrives, I do not wish to leave. My exit signals the end of a relationship colored by both longevity and substantial suffering. Tom is my patient, and our relationship is almost exclusively a profession-

conflict refuses to abate. The music is Richard Strauss’s *Also Sprach Zarathustra*, and it helps organize my thoughts about Tom and our joint undertaking during the past 5 years.



Strauss’s composition was inspired by Nietzsche’s philosophical parable of the same title, but it is a stretch to say that the music is even loosely based on the book. Strauss’s brief program for his tone poem conjures a dialectical battle in which Man, using Science, attempts to overcome the forces of Nature: “First

movement: Sunrise, Man feels the power of God. Andante religioso. But man still longs. He plunges into passion (second movement) and finds no peace. He turns toward science, and tries in vain to solve life’s problem in a fugue (third movement). Then agreeable dance tunes sound and he becomes an individual, and his soul soars upward while the world sinks far below him.”¹

movement: Sunrise, Man feels the power of God. Andante religioso. But man still longs. He plunges into passion (second movement) and finds no peace. He turns toward science, and tries in vain to solve life’s problem in a fugue (third movement). Then agreeable dance tunes sound and he becomes an individual, and his soul soars upward while the world sinks far below him.”¹

I turn on the radio during the drive back to the city and am greeted by the tumult of an orchestral argument. Trumpets and trombones intone a rising theme of C-G-C, which is immediately reversed downward. The strings swirl manically around the brass theme, upward and downward, building to a massive unison climax with organ on C-G-C. The mighty exclamation is soon followed by a quaint Viennese waltz, and though there is relative harmony among the participants involved, the same musical themes remain, and an undercurrent of

The Nature theme is strongly rooted in C major, a scale composed of all “natural” tones (no sharps or flats), and it first appears as the rising C-G-C sunrise motif in the trumpets (famously used in the film *2001: A Space Odyssey*). The nature theme contrasts strongly with the musical representation of Man and his Science, introduced by the string section in the harmonically distant key of B major.

As I retrace my route through the rural landscape, *Also Sprach Zarathustra* provides a surreal

soundtrack in which art imitates life; section VII of the piece is even subtitled “The Convalescent.”

I have become a participant in Strauss’s musical struggle, in which Man is a symbol for patients, physicians, nurses, hospitals, chemotherapy, and radiation treatments. Unrelenting tumor growth, the frailty of the human body, and the march of time are Nature’s manifestations. Man occasionally deludes himself into thinking he has control over this struggle, but at best he can only blunt the forces of Nature with his scientific interventions. I recall my last set of chemo orders for Tom: a final, futile scientific maneuver against impervious uni-

versal forces. Ultimately, the only remaining choice was to acquiesce to Nature.

I think of Tom’s soul preparing to take its final journey, like the soul in Strauss’s description of his piece. Tom and I were both willing participants in the dialectic of Man versus Nature, though through most of our journey together, it was comforting to disregard the forces pitted against us.

As *Also Sprach Zarathustra* winds to a quiet end, the Man/Science and Nature themes are not reconciled. The high strings forlornly hold to B major, alternating with the bass violins, which pluck pizzicato Cs. The dialogue continues

quietly for a few moments, and the exchange ends with Nature receiving the last low-pitched word in the argument. In the confrontation of Man and Science against Nature, there is no satisfactory resolution, in music or in life.

Disclosure forms provided by the author are available at NEJM.org.

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