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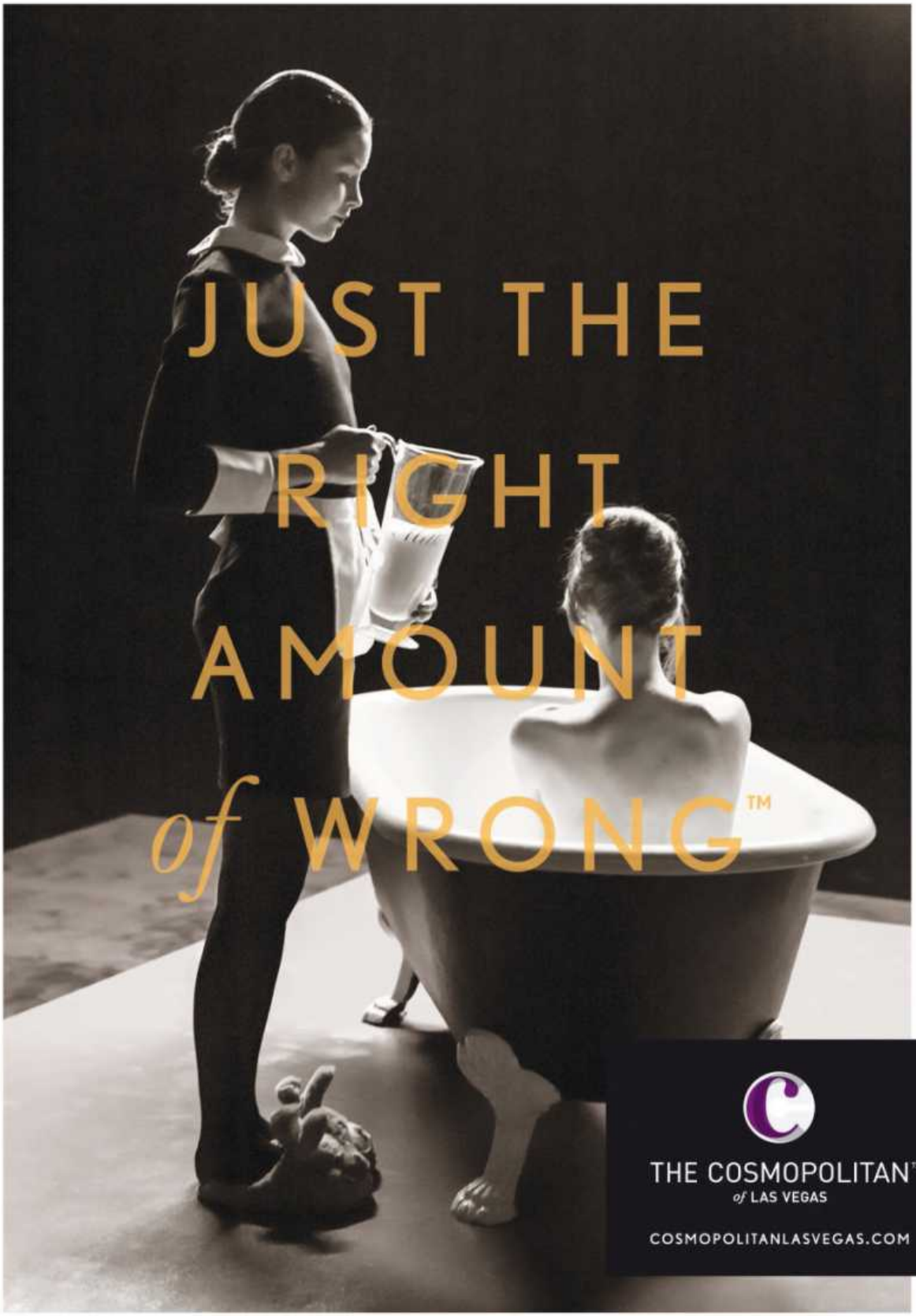

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THE MAIL

EATING FAST . . .

Michael Specter, in his article about the varying modes of the fast-food industry, writes that "fast food" has come to mean many things ("Freedom from Fries," November 2nd). There is Sweetgreen, which serves salads in three minutes, and then there are McDonald's burgers and fries. But there is a third way, at least where I live, in Texas. Most supermarkets are now also fast-food joints that offer a variety of ready-made dishes and fresh pre-assembled meals that you take home and put in an oven for fifteen to thirty minutes. The fare at the H-E-B down the street is deli sandwiches, sushi, and salads (greens-based, with or without meat, slaw, potatoes, beans, and pasta). The food is good and fresh, and most is healthy-ish. There is a nice food court and hot-food counter service, as in a cafeteria. (Here in Austin, we also have a food-truck culture, offering things like Mongolian vegan, Mayan seafood, or barbecued goat; the trucks all seem to start with real food, but who knows what is really in the ketchup.) All this assumes driving. Texas is car and truck country. Good food variety is handy only if you can hop in your car and drive five minutes one way or the other. People who live in big cities have it tough in many ways, and getting healthy, varied, cheap food can be one of them.

Jay Bute
Austin, Texas

While it is incredibly important to move the culture away from fast food, it is crucial that we understand which populations are loyal to fast food, and why. Many Americans can learn to choose a healthier way of life, but others don't have the choice: a low-income single mom with three children can't be expected to spend forty dollars at Chipotle rather than fifteen dollars at McDonald's. Sweetgreen may be educating economically disadvantaged children about nutritional choices, but that doesn't place in their pockets the ten dollars required to afford a better meal. Healthier options are becoming more widely available, and that is a fantastic development. The United States still needs to focus on how we can increase the accessibility of those meals in order to cater to the most economically vulnerable populations.

Taylor Jordan
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. . . EATING WELL

Lauren Collins, in writing about the World's 50 Best list, draws attention to the awkward relationship between the restaurant industry and its ratings systems, of which there are many ("Who's to Judge?," November 2nd). Chefs tend to love whichever critics love them back, and can be outspoken about all others as messengers of evil. But, just as one couldn't reasonably expect two umpires to call the exact same strike zone, I don't think anyone expects restaurant rankings to be perfect. What I look for is a detectable and predictable point of view, ideally one that happens to land in the right place at the right time. In that regard, as Collins points out, the 50 Best is, well, the best. As the Michelin Guide struggles with its identity, there's all the more need for a new high court of food. And let's not tangle ourselves up in debating the problems of corporate sponsorship. The Michelin Guide, after all, was invented by a tire company to encourage road trips.

Ben Leventhal
Co-Founder, Eater and Resy
New York City

•

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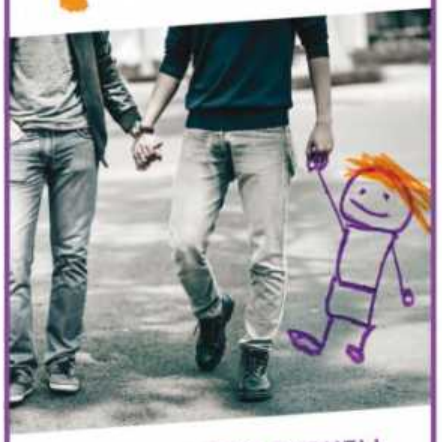

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GOINGS ON ABOUT TOWN

NOVEMBER 2015 | WEDNESDAY 18TH • THURSDAY 19TH • FRIDAY 20TH • SATURDAY 21ST • SUNDAY 22ND • MONDAY 23RD • TUESDAY 24TH

GLAMOUR, ACCORDING TO JACQUELINE DE RIBES, "is a worldly style, lots of allure, a touch of flamboyance, a deep know-how, all wrapped up in natural seduction"—and, sometimes, wrapped in polka dots, too. This soigné silk-faille dress and sequinned cotton bolero, designed by the Paris-born countess in 1988, is one of sixty ensembles, both ready-to-wear and haute couture, in an exhibition devoted to the eighty-six-year-old's impeccable style, which opens at the Costume Institute at the Metropolitan Museum on Nov. 19. While she has often worn gowns of her own invention, de Ribes has also been a favorite of such designers as Pierre Balmain, Yves Saint Laurent, Bill Blass, and Norma Kamali. In 1999, Jean Paul Gaultier even named an haute-couture collection in her honor: "Divine Jacqueline."

PHOTOGRAPH BY PARI DUKOVIC

CLASSICAL MUSIC | ART
NIGHT LIFE | DANCE
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CLASSICAL MUSIC

OPERA

Metropolitan Opera

John Dexter's production of Berg's **"Lulu,"** from 1977, was becoming tattered by the time of its last revival, in 2010, but it had long earned its legendary status, allowing two generations of performers to give full range to both the work's compositional complexity and the boundless passions that bring it to life. In a boldly original turnabout, the acclaimed South African artist and director William Kentridge has reimagined the piece as a crystalline chamber drama in which the visual décor—a carefully measured flow of black-and-white images inspired by Expressionist woodcuts and Weimar cinema—serves to frame and constrain the opera's emotive power: instead of seducing the audience, Lulu, the ultimate femme fatale, becomes subject to its "gaze." The alluring Marlis Petersen, bringing her pinpoint coloratura to the title role, embraces the concept, etching her part as if on glass; as her husband and nemesis, Dr. Schön, Johan Reuter offers a more full-blooded interpretation. Susan Graham lavishes vocal splendor onto the role of Countess Geschwitz; Daniel Brenna is a puppyish but vocally hearty Alwa. Lothar Koenigs, a late replacement for James Levine, conducts with self-effacing expertise. (Nov. 21 at 12:30 and Nov. 24 at 7.) • **Also playing:** Plácido Domingo conducts **"Tosca,"** pacing a cast that features Oksana Dyka, Marcello Giordani, and James Morris in the leading roles. (Nov. 18 at 7:30 and Nov. 21 at 8:30.) • Michael Mayer's excessive and ebullient Las Vegas-style production of **"Rigoletto"** features three bona-fide stars, the thrilling Polish tenor Piotr Beczała (in the role of the Duke), Olga Peretyatko (whose Gilda is a warm, sweet presence), and the reliable Željko Lučić (as Rigoletto); Pablo Heras-Casado conducts, with import. (Nov. 19 at 7:30.) • A cynic might decry the Met's predictable programming of **"La Bohème"** during yet another holiday season, but Franco Zeffirelli's masterly production of Puccini's midwinter tragedy, now deep into its fourth decade, continues to cast an irresistible spell. The conductor Paolo Carignani leads a first-rate cast, including Ramón Vargas, Barbara Frittoli, Ana María Martínez, and, in his company début, Levente Molnar. (Nov. 23 at 7:30.) (Metropolitan Opera House. 212-362-6000.)

Juilliard Opera

Poulenc's **"Les Mamelles de Tirésias,"** written during the Nazi occupation of France, and Ullmann's **"Der Kaiser von Atlantis,"** written at the Theresienstadt concentration camp, share a sense of dizzying, chaotic satire—the first light, the second quite dark—in ghastly, war-riven times. Juilliard brings the two hour-long operas together in a double bill directed by the imaginative Ted Huffman and conducted by Keri-Lynn Wilson. (Peter Jay Sharp Theatre, Lincoln Center. events.juilliard.edu. Nov. 18 and Nov. 20 at 7:30 and Nov. 22 at 2.)

ORCHESTRAS AND CHORUSES

New York Philharmonic

"Rachmaninoff: A Philharmonic Festival" is a three-week series devoted to the music of Russia's last great Romantic composer (who died an American citizen), an effort that would be inconceivable without a superlative exponent of the composer's instrument on hand—in this case, Daniil Trifonov, unquestionably the finest young pianist to come out of Russia in recent years. All of the programs feature guest conductors. For the second, the orchestra brings aboard the distinguished veteran Neeme Järvi, who leads two rarely heard works—the Piano Concerto No. 4, a mellow product of the composer's later years, and the Symphony No. 1 in D Minor, an early piece that reveals a more trenchant and hard-edged Rachmaninoff than the one many listeners have come to know. (David Geffen Hall. 212-875-5656. Nov. 19 at 7:30, Nov. 20 at 2, and Nov. 21 at 8.) (Note: Trifonov will join several of the Philharmonic's principal strings in an all-Rachmaninoff concert at the 92nd Street Y on Nov. 22 at 3. 212-415-5500.)

Berlin Philharmonic Orchestra

Simon Rattle, whose reign at the top of what is arguably Europe's finest orchestra will come to a close in 2018, is taking stock and offering New York a full run of the Beethoven symphonies, at Carnegie Hall. The first program presents the Symphony No. 3 in E-Flat Major, "Eroica"—a lance thrown into the uplands of Romanticism—preceded by the more demure Symphony No. 1 in C Major. The second features the lyrically abundant Symphony No. 2 in D Major and the famously muscular Symphony No. 5 in C Minor (with the "Leonore" Overture No. 1 serving as the concert's amuse-bouche). The next one finds Beethoven inventing neoclassicism in the Eighth Symphony and enriching the poetic possibilities of Romanticism in the Symphony No. 6, "Pastorale." Friday night belongs to the ever-underrated Symphony No. 4 in B-Flat Major—a last look back to the "Austrian chamber symphony," as perfected by Haydn—and the bounding, ever-popular Symphony No. 7 in A Major. The series wraps up on Saturday night with, of course, the Symphony No. 9—the "Choral," as they used to say—with Rattle and the orchestra joined by the Westminster Symphonic Choir and the vocal soloists Annette Dasch, Eva Vogel, Christian Elsner, and Dimitry Ivashchenko. (Nov. 17-21 at 8. carnegiehall.org.)

White Light Festival: "Thomas Adès: Concentric Paths"

In one of the most important artistic ventures of the fall season, Lincoln Center offers a terpsichorean tribute to the paramount British composer of his generation, a Sadler's Wells production that brings the Orchestra of St. Luke's (with Adès conducting and at the piano) together with several of the finest choreographers around—Wayne McGregor, Karole Armitage, Alexander Whitley, and Crystal Pite—who will bring their respective talents to Adès's compositions "Concentric Paths," "Life Story," the Piano Quintet, and "Polaris." (City Center, 131 W. 55th St. whitelightfestival.org. Nov. 20-21 at 7:30 and Nov. 22 at 3.)

Juilliard Orchestra

Taking some time away from his home base at the Phil, Alan Gilbert, also a Juilliard professor, brings the school's flagship orchestra to Carnegie Hall, leading it in Germanic gems by Schumann (the "Manfred" Overture), Berg (the Three Pieces for Orchestra, a work of fearsome power), and Wagner ("A Ring Synthesis," a condensed, opera-without-voices arrangement by Gilbert himself). (212-247-7800. Nov. 24 at 8.)

RECITALS

National Sawdust: "Boulez at 90"

Love him or not, the music—and, just as important, the gigantic musical personality—of Pierre Boulez decisively influenced the course of postwar modernist culture. The International Contemporary Ensemble, a battalion of fearless young virtuosos ardently devoted to his cause, celebrates the composer's legacy in a four-concert series at the stylish new Williamsburg venue, beginning with works by Boulez, Olga Neuwirth (a world première), and George Lewis, and closing with a powerhouse program offering classic pieces by Nono, Stockhausen ("Kontra-Punkte"), and Boulez (for many, his signature piece, "Le Marteau sans Maître"). (80 N. 6th St., Brooklyn. nationalsawdust.org. Nov. 17 at 7, Nov. 18-19 at 9:30, and Nov. 21 at 8.)

"Liaisons: Reimagining Sondheim from the Piano"

Stephen Sondheim, the undisputed master of the American music theatre, enjoys plaudits from Broadway babies and classical connoisseurs alike. The indefatigable pianist Anthony de Mare does him deserved honor with this multi-concert project, in which an impressive collection of composers were commissioned to write "answer" pieces to Sondheim's songs—a roster of both lauded veterans and eager newcomers which includes, in this final program, Steve Reich, David Shire, David Rakowski, Mary Ellen Childs, Wynton Marsalis, Paul Moravec, Derek Bermel, and Andy Akiho. (Broadway at 95th St. symphonyspace.org. Nov. 19 at 8.)

Music at the Metropolitan Museum: Il Pomo d'Oro

The Croatian countertenor Max Emanuel Cenčić is the guest of this winning period-performance group from Italy, which presents a program of vocal and instrumental work from the Neapolitan Baroque, by Hasse, Porpora, and the Scarlattis, both Domenico and Alessandro. (Fifth Ave. at 82nd St. 212-570-3949. Nov. 20 at 7.)

Chamber Music Society of Lincoln Center

With "Lulu" in town, the music of the Second Viennese School is getting quite a run in New York of late. Webern's intimate arrangement of Schoenberg's extravagant First Chamber Symphony is the centerpiece of a program that begins with music by Haydn and closes with Brahms's Piano Quartet No. 3 in C Minor. The musicians include the violinist Kristin Lee, the clarinettist Tommaso Lonquich, and the honored American pianist Gilbert Kalish. (Alice Tully Hall. 212-875-5788. Nov. 22 at 5.)

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ART

MUSEUMS AND LIBRARIES

Museum of Modern Art
"Ocean of Images: New Photography 2015"
The museum has turned its once myopic annual roundup into an international biennial of work by nineteen artists and collectives who don't limit themselves to photography. The show includes videos, small wooden models, free-standing sculptures, artists' books, piles of posters, and a newsstand based on a subway-station outpost in Brooklyn. Lieko Shiga's enormous pictures, displayed as slabs leaning against the wall, began as souvenirs of the 2011 tsunami in Japan, but were digitally reworked into vividly colorful fever dreams. In another tour de force, Katharina Gaenssier fills a wall just outside the galleries with a patchwork collage of black-and-white photographs, which conflates the museum's own Bauhaus-inspired staircase, by Yoshio Taniguchi, with Walter Gropius's famous 1926 stairs in Dessau, Germany, and Oskar Schlemmer's 1932 painting of the same busy steps—shuffling art and architecture with rigor and wit. Elsewhere, works by John Houck, Lucas Blalock, and Basim Magdy involve smartly subtle distortions of so-called real space. For an otherwise wide-ranging and intelligent show, though, the view of photography presented here is surprisingly narrow, emphasizing inward-turned manipulation rather than outward engagement. Through March 20.

In 1956, Gordon Parks travelled to Jim Crow Alabama on assignment for *Life*. His eloquent photographs (including "Untitled, Shady Grove," above) gave lie to the idea of "separate but equal," as they conveyed both the hardships and the idylls of black lives in the rural South. They're being shown for the first time in New York, at Salon 94 Freemans.

COURTESY GORDON PARKS FOUNDATION AND SALON 94

The Whitney Museum
"Frank Stella: A Retrospective"
The crowded installation tracks the New York painter's fifty-seven-year career. At the start is the deathly glamour of Stella's Black Paintings—bands in matte enamel, separated by fuzzy pinstripes of nearly bare canvas—which shocked with their dour simplicity when they were first shown at MOMA, in 1959. Begun when the artist was a senior at Princeton, they amounted to tombstones for Abstract Expressionism and heralds of minimalism. The show ends with one crazy-looking mode after another, mostly in the form of wall-hung constructions, created since the early nineteen-seventies. In between are too few of the swaggering compositions (target-like concentric stripes, designs based on compasses and protractors, shaped canvases) that made Stella a god of the sixties art world. His impact on abstract art was something like Dylan's on music and Warhol's on more or less everything. Stella made a permanent difference in art history. He is extraordinarily intelligent and extravagantly skilled. But his example is cautionary. Even groundbreaking ideas have life spans, and Stella's belief in inherent values of abstract art has long since ceased to be shared by younger artists. His ambition rolls on, unalloyed with self-questioning or humor. Through Feb. 7.

Bronx Museum
"Martin Wong: Human Instamatic"
Like a firecracker with a very long fuse, the reputation of the Chinese-American painter and bohemian's bohemian Martin Wong has sizzled inconspicuously since before his death, in 1999, from AIDS-related causes, at the age of fifty-three. It should now go bang, thanks to this terrific retrospective, crisply curated by Antonio Sergio Bessa and Yasmin Ramírez, which includes brick-by-brick slum cityscapes; witty messages in sign language, rendered by fat fingers that emerge from cufflinked white cuffs; gnomic symbologies of star constellations and eight balls; erotic fantasies of hunky firemen and seraphic prison inmates; and celebrations of the artist's close friend Miguel Piñero, the late poet, activist, erstwhile armed robber, and gifted author. All are drawn or painted in a commanding style that bridges exacting realism and poetic vision. The best pictures lock your gaze and take your mind for a fine ride. Through Feb. 14.

New Museum
"Barbara Rossi: Poor Traits"
This small but welcome exhibition of one of the original Chicago Imagists—Rossi's solo museum début in New York—is a reminder that the group was both oddball and tender. Before Rossi became an artist, she planned on becoming a nun, and there's a sense of ritualized devotion in the solid planes of color and the hundreds of dots painted on the reverse sides of Plexiglas sheets. (The dots have affinities with Australian Aboriginal paintings, not to mention with the Art Institute of Chicago's most famous piece, Seurat's "Sunday Afternoon on the Island of La Grande Jatte.") These elements cohere into bulbous almost-portraits, some affixed with human hair, whose subjects' faces are obscured by overlapping folds

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MUSEUMS SHORT LIST

METROPOLITAN MUSEUM
"Jacqueline de Ribes: The Art of Style." Opens Nov. 19.

MUSEUM OF MODERN ART
"Joaquín Torres-García: The Arcadian Modern." Through Feb. 15.

MOMA PS1
"Greater New York." Through March 7.

GUGGENHEIM MUSEUM
"Photo-Poetics: An Anthology." Opens Nov. 20.

WHITNEY MUSEUM
"Rachel Rose: Everything and More." Through Feb. 7.

BROOKLYN MUSEUM
"Coney Island: Visions of an American Dreamland, 1861–2008." Opens Nov. 20.

AMERICAN MUSEUM OF NATURAL HISTORY
"The Secret World Inside You." Through Aug. 14.

AMERICAN FOLK ART MUSEUM
"Art Brut in America: The Incursion of Jean Dubuffet." Through Jan. 10.

FRICK COLLECTION
"Andrea del Sarto: The Renaissance Workshop in Action." Through Jan. 10.

NEUE GALERIE
"Berlin Metropolis: 1918-1933." Through Jan. 4.

NOGUCHI MUSEUM
"Museum of Stones." Through Jan. 10.

STUDIO MUSEUM IN HARLEM
"A Constellation." Through March 6.

GALLERIES SHORT LIST

CHELSEA

Mary Heilmann
303 Gallery
507 W. 24th St. 212-255-1121.
Through Dec. 19.

Camille Henrot
Metro Pictures
519 W. 24th St.
212-206-7100.
Through Dec. 12.

Miranda Lichtenstein
Dee
545 W. 20th St.
212-924-7545.
Opens Nov. 21.

Alina Szapocznikow
Rosen
525 W. 24th St.
212-627-6000.
Through Dec. 5.

DOWNTOWN

Jennifer Bornstein
Brown
291 Grand St. 212-627-5258.
Through Dec. 6.

Gordon Parks
Salon 94 Freemans
1 Freeman Alley.
212-529-7400.
Through Dec. 20.

and plaits. A dozen airy drawings, quieter than the paintings but no less absorbing, feature squiggles and bubbles that recall the automatism of the Surrealist Unica Zürn. Through Jan. 3.

Queens Museum
"Zhang Hongtu"
Born into a Muslim family in China in 1943, Zhang trained as a Socialist realist, was sent to work in a jewelry factory during the Cultural Revolution, and jumped at the chance to come to New York, in 1982, after Deng Xiaoping opened China's doors. He has lived here ever since. The first American survey of his wily art includes early figurative drawings of factory workers and the artist's sister, dark self-portraits and landscapes that recall the paintings of Anselm Kiefer, and, best of all, quippy political Pop. The Great Helmsman haunts him. Mao appears on boxes of Quaker Oats, in an outline of M.S.G. on the floor, as the mustachioed Mona Lisa of Duchamp's "L.H.O.O.Q.," and in the style of a dozen other Western artists: Picasso, Baselitz, Ryman. One-note as they are, Zhang's Maos evoke the discordance between the propaganda of his youth and the commercial free-for-all of his adopted country. Less successful are recent paintings updating Song-era waterscapes in grimy oil, even if the smog in Beijing more than validates his concern for China's environment. Through Feb. 28.

GALLERIES—UPTOWN

Francis Bacon
A deluxe show of late-period Bacon will divide fans from foes. A great many very large works, including diptychs and triptychs, recycle the British painter's formula of tortured bodies within elegant stage sets: boxed meat, perhaps, or canned anguish. Heads that are all screaming mouth recur in 1988, still upset about something forty-four years on from their début. Decorativeness rules. The artist's de rigueur gilt frames and glass fronts lend swank and sheen to pictures with grounds of sumptuous, single hues: orange, yellow, oxblood, sky blue. These are Bacons about Bacons. If you like one, you are apt to like them all. Through Dec. 12. (Gagosian, 980 Madison Ave. 212-744-2313.)

Troy Brauntuch
Brauntuch, who is now based in Texas, was one of five artists in Douglas Crimp's legendary 1977 show, "Pictures," which revalorized representation after decades ruled by abstraction. This invaluable crash course in Brauntuch's early work reintroduces his unnerving, painstaking large-scale drawings, in pencil or conte crayon on black paper, which permit only the haziest sense of a subject. Two white disks in the gloaming resolve into naval officers' caps; a Nazi artist's studio is shrouded in near-complete darkness. You can look long and hard, but you cannot dilute the work's mystery. Through Jan. 9. (Petzel, 35 E. 67th St. 212-680-9467.)

"Desdemona for Celia by Hilton"
This exhibition, inspired by Verdi's "Otello," features paintings by Celia Paul, an underexposed British realist, as organized by Hilton Als, this magazine's theatre critic. A few briny seascapes recall the Moor's naval career, but most of the works star a sorority of gaunt Desdemonas, lovesick and doubtful. Paul's onetime lover Lucian Freud looms as an unavoidable influence, but her best portraits, in a stern palette of blue and mauve, recall another, shrewder British artist—the great realist Gwen John. Though Jan. 2. (Gallery Met, Amsterdam Ave. at 65th St. 212-799-3100.)

GALLERIES—CHELSEA

Tom Burr
At the heart of this American conceptualist's strong, if dour, show is a large wooden planter, whose trees and soil re-create a section of a Zurich park that was once a gay cruising ground, then a notorious drug den, and is now favored by families and tourists. Burr further memorializes a queer psychogeography, erased by both AIDS and gentrification, in black-and-white photographs of shuttered public toilets, documented as sternly as any watertowers by Bernd and Hilla Becher. Burr's newest works offer a more abstract urban view: stainless-steel panels, excised with rectangles and circles and printed with subway grates, discarded latex gloves, and a double entendre that implies pursuits in both romance and real estate: "available." Through Dec. 23. (Bortolami, 520 W. 20th St. 212-727-2050.)

Brice Marden
Self-renewing yet again, at the age of seventy-seven, the poet of abstract painting after minimalism rings startling changes on his past modes of monochrome and of linear webs. An early device—underlayers exposed at the bottoms of single-color canvases—returns, magnified into curtains of runny paint. Webbed lines appear to collapse, languorously, within their containing surfaces. Unnameable colors brood as always, but in newly powerful, multi-panelled formats. Dense drawings fulminate. Though backward-looking, the show doesn't feel a bit elegiac. It more nearly suggests the Big Bang of a freshly launched career. Through Dec. 23. (Marks, 522 W. 22nd St. 212-243-0200.)

Giorgio Morandi
It is easy to remember having been moved, profoundly, by a Morandi still-life, but never quite how. You have to see one again to reënter the mystery. A major show of dozens of them, most from the artist's prolific last two decades before his death, in 1964, enraptures. Of special appeal are four from a 1952 series: bottles differently grouped around a crumpled yellow cloth. Very slight distinctions in hue, tone, and texture gently jolt. Morandi pursued the impossible ideal of three dimensions becoming two with the heroic futility of Achilles and the tortoise, in Zeno's paradox: close, closer, closest, as good as there, not there. Beauty is his recurrent consolation and our regular bliss. Through Dec. 19. (Zwirner, 537 W. 20th St. 212-517-8677.)

Bridget Riley
Twenty-seven paintings and five drawings in three styles, made between 1981 and this year, exalt the sorceress of optical splendors. The rewards of Riley's work come slowly, then all of a sudden. Initially, the stripes, overlapped petals, and gridded black-and-white triangles may appear monotonous. But look—the interacting colors begin to ripple and blush, and the grids to jitter and snap. At last, each picture congratulates us on our great good luck in being equipped with eyes. Through Dec. 19. (Zwirner, 525 W. 19th St. 212-727-2070.)

Sandy Skoglund
In the late seventies, Skoglund made her mark with staged photographs of monochromatic interiors—people surrounded by a school of orange goldfish or a clowder of chartreuse cats. One of those Pop-surreal images, a yellow room festooned with blue coat hangers, has been re-created in the gallery's window, but the exhibition proper focusses on a series of tableaux made in 1986 and revised in 2005, to heighten their already startling impact. With clashing colors, flattened pictorial space, and odd pileups of incident, the meticulously constructed photomontages suggest stills from a Pedro Almodóvar movie—even a parakeet seems to be on the verge of a nervous breakdown. Through Dec. 23. (Ryan Lee, 527 W. 26th St. 212-397-0669.)

Brea Souders
Working with bleach, watercolor, and chemicals on photosensitive paper, the New York-based artist makes cameraless pictures of figures, faces, and shapes—a white dog, a pink baby, a man in a yellow fedora, a row of colorful test tubes—that veer in and out of abstraction. The images are loose, liquid, and full of corrosive accidents, including holes that turn into eyes. Lucas Samaras's manipulated Polaroids come to mind; at times, so does the late work of Miró. Through Dec. 23. (Silverstein, 535 W. 24th St. 212-627-3930.)

ARE YOU NOW OR HAVE YOU EVER BEEN...

TRUMBO

Bryan Cranston Diane Lane and Helen Mirren

Louis C.K. Elle Fanning John Goodman Michael Stuhlbarg

Written by John McNamara Directed by Jay Roach

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NIGHT LIFE

ROCK AND POP

Musicians and night-club proprietors lead complicated lives; it's advisable to check in advance to confirm engagements.

Grimes

In September, in a Profile of this twenty-seven-year-old vocalist and electronic producer, Kelefa Sanneh considered the "disquieting possibility" that Grimes's riveting Web presence, spread across intoxicating music videos, cathartic Tumblr screeds, and exclamatory headlines, might have a broader audience than her art-pop cult hits. It's a delicate balance that many resourceful young acts try to achieve: self-promotion not out of vanity but necessity, allowing a magnetic image to buoy music that's too unruly for radio. Songs as mesmeric and thumping as "Oblivion" and "REALiTi" should not be second thoughts, however—if there's a syllogism to glean, it's that seeing Grimes in person ranks above all. Her "Rhinestone Cowgirl" tour features extensive choreography and various costume changes, as well as numbers from her just-released "Art Angels" album. (Music Hall of Williamsburg, 66 N. 6th St., Brooklyn. 718-486-5400. Nov. 18.)

Hudson Mohawke

What do you do after you've cranked every knob, flooded every filter, scraped the rafters with every synth, and hit rock bottom with every drop? If you're this prodigal Glaswegian d.j.-turned-producer, you start a band. Mohawke tested a new live show at Irving Plaza last May, backed modestly but effectively by the Two Door Cinema Club drummer **Ben Thompson** and the keyboardist **Redinho,** who join him again this week. These days, 808 claps and rattling DAW loops have mostly displaced the drum fills and amp pedals that were once widely coveted by young music hopefuls: at just under thirty, Mohawke was among the first generation of bedroom noodlers drawn more intensely to turntables than to electric guitars. It's affecting, then, to watch him surround himself with players and reinterpret selections from his summer album, "Lantern"—what could've been? Opening is the urban pop anarchist **The-Dream,** who'll only give the evening more gloss. (Webster Hall, 125 E. 11th St. 212-353-1600. Nov. 18.)

Konshens

The six-minute video for this dancehall fixture's 2012 song "Gal A Bubble" stars a fleet of young women who've taken over at AutoVision, a carwash/restaurant/party space in Kingston, Jamaica. Soaping up luxury vehicles as the song leaks from Jeep speakers nearby, the employees soon can't help but wind and twist to the rhythm. A friend calls Konshens over to the garage from a recording session, to show him how his taut single has flipped this small business on its head. The gluteal gymnastics that follow might leave Miley Cyrus red-faced, but they handily demonstrate the genre's long-standing proficiency for gripping hips and swinging them every which way. Konshens has performed his sweaty, sinful hits for crowds across Europe, Asia, and, of course, the Caribbean; he brings the bash to Manhattan just as the autumn chill sets in, backed by the prolific Japanese sound system **Mighty Crown.** (S.O.B.'s, 204 Varick St., at W. Houston St. 212-243-4940. Nov. 19.)

Oneohtrix Point Never

The electronic auteur Daniel Lopatin is academic, and near clinical, with his use of sound. Like Brian Eno before him, he conceives of his schizophrenic productions not as passive facilitators but as active exhibitions—food to be photographed, if not digested. Still, Lopatin's techniques are deftly utilitarian: to promote his upcoming "Garden of Delete" album, he uploaded a batch of the project's foundational sound files for his fans to rip, flip, and rearrange before hearing the official release. "I Bite Through It," his first single, stutters and stabs with glitchy abandon before summoning a bridge that sounds like a guitar solo played by a computer algorithm. As part of Pitchfork's Tinnitus concert series, which highlights composers of extreme sound, Lopatin will display his works at this cavernous space in North Williamsburg. (Villain, 50 N. 3rd St., Brooklyn. 718-782-2222. Nov. 20.)

Small Black

The Great Chillwave Rush of the summer of 2009 has come to be remembered as a cautionary tale of the Internet era, spotlighting just how easy it is for a micro-genre to become a marketing tool almost overnight. This quartet emerged during that cycle, and, try as they might to shed the passé associations, the label continues to stick. No matter; this week, they settle into this South Williamsburg spot for a two-night stand, in celebration of their new album, "Best Blues." It is the finest of their career, built on driving electro-pop beats and washed-out synths, all capped by the singer Josh Kolenik's shy, syrupy falsetto. Hear it now, so you can point it out when it pops up on Urban Outfitters' in-store mix. (Baby's All Right, 146 Broadway, Brooklyn. 718-599-5800. Nov. 20–21.)

Junior Vasquez

Vasquez's Arena party lasted just more than a year at Manhattan's famed Palladium, one of the last proper nights held at the Fourteenth Street club before it was closed, in 1997, to make way for New York University housing. But this downtown dance pioneer hasn't missed a beat since then, and he'll revive his legendary party in Hell's Kitchen for a one-off night christened "House Is a Feeling: Arena Reunion." In the eighties, Vasquez held court in a thriving club scene of gay, straight, and everywhere-in-between revellers, who welcomed the sunrise most mornings. Space, the award-winning Ibiza Town mega-club, fittingly hosts the d.j.'s homecoming at its first North American outpost. (637 W. 50th St. 212-247-2447. Nov. 21.)

Zs

This protean instrumental group has been deftly melding classical rigor and rock energy since it formed, fifteen years ago. Currently made up of saxophone, guitar, and drums, Zs recently released a mesmerizing album called "Xe," highlighted by an eighteen-minute title track that moves between mechanistic grooves, fleeting ambient sounds, and bursts of wailing thrash driven by the bandleader Sam Hillmer's sax. (Palisades, 906 Broadway, Brooklyn. 201-214-7444. Nov. 20.)

JAZZ AND STANDARDS

Django Reinhardt Festival Allstars

No one has ever truly captured the passionate brilliance of the Belgian Gypsy guitarist Django Reinhardt, who died in 1953, but that hasn't stopped generations of players from following in his virtuosic path. The French father-and-son guitarists **Dorado** and **Amati Schmitt** lead a quintet in this annual festival honoring the six-string king. Stateside stylists, including the trumpeter **Bria Skonberg** and the singer **Cyrille Aimee,** will join the finger busters throughout the week. (Birdland, 315 W. 44th St. 212-581-3080. Nov. 17-22.)

Dave Douglas Quintet

As proven over three years of vital performances and in a trio of critically acclaimed recordings, the trumpeter Dave Douglas is currently leading what might be the most formidable and cohesively balanced ensemble of his career. On the recent album "Brazen Heart," his quintet, featuring the tenor saxophonist **Jon Irabagon** and the pianist **Matt Mitchell,** matches Douglas's fervent post-bop originals with a pair of stately spirituals, all executed with equally heartfelt zeal. (Jazz Standard, 116 E. 27th St. 212-576-2232. Nov. 19-22.)

George Garzone

Mention the city of Boston to saxophonists across the nation, and the name George Garzone invariably springs to their lips. A respected teacher and general inspiration, the sixty-five-year-old local legend remains a beacon of hard-won virtuosity and open-eared creativity. This week, the indomitable tenor player brings two ensembles south: the **Sons of George Garzone,** a quintet comprised of younger students (Nov. 20), and his flagship trio, the **Fringe** (Nov. 21). (Cornelia Street Café, 29 Cornelia St. 212-989-9319. Nov. 20-21.)

David Liebman Group: Expansions

On a scene bursting with intrepid young saxophonists, it's always a kick to hear Dave Liebman, a veteran post-bop improviser who brings valued expertise and undiminished passion to the game. His Expansions outfit includes the questing pianist **Bobby Avey** and the winds player **Matt Vashlishan.** (Jazz Gallery, 1160 Broadway, at 27th St., Fifth fl. 646-494-3625. Nov. 21.)

Harold Mabern Trio

You want the real thing? You've got it. Mabern, a seventy-nine-year-old pianist whose blues-soaked style was formed in postwar Memphis alongside such icons as Phineas Newborn and George Coleman, has collaborated with Lee Morgan and Sonny Rollins, among others. He is still playing with gusto and invention, and he's making his younger rhythm section work hard for its pay. (Smalls, 183 W. 10th St. 212-252-5091. Nov. 18.)

Buster Williams and Renee Rosnes

With a long-established instrumentalist like the bassist Buster Williams, it's easier to identify the few modern masters he hasn't worked with than the multitudes he can list on his résumé. He's joined by the adroit pianist Renee Rosnes for some elegant and animated duets. (Mezzrow, 163 W. 10th St. mezzrow.com. Nov. 20-21.)

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DANCE

In "The One Hundreds," professional and nonprofessional dancers perform a hundred different phrases.

BIRTHDAY PARTY

Twyla Tharp celebrates her fiftieth.

THIS PAST YEAR, TWYLA THARP kicked off the fiftieth anniversary of her career by restaging several of her earlier works, including the lovable "One Hundreds," from 1970. This piece is in three parts. First, two dancers, side by side, do a hundred phrases, fifty apiece. Then five dancers get up there and do the same hundred steps, twenty apiece. Then, a hundred people—some of them professional dancers, with, often, just folks off the street—take the field, and each of them does one phrase, one of the hundred. It takes these people longer to get on the field and off than to do their little thing, and there is lots of bumping into each other.

In certain respects, "The One Hundreds" is atypical of what Tharp eventually became. It is highly conceptual—those were conceptual days, the sixties and seventies. But as I watched "The One Hundreds," with the wind off Rockefeller Park blowing through my hair, my main thought was simply, How does she think up so many steps? Other dance works no doubt have a hundred steps: "The Sleeping Beauty," "Swan Lake." But here Tharp was highlighting her hundred steps and saying, "I made them! Me! Me! And I'm going to do this for a living!"

As part of her anniversary, Tharp arranged a ten-week, seventeen-city tour, which will culminate at the Koch Theatre this week. I wish she had celebrated by reviving more of her old works. What wouldn't I give to see "The Catherine Wheel" (1981), with its haunting David Byrne score, again? Instead—and I guess you have to admire her for this—she created two brand-new works, "Preludes and Fugues," to Bach's "Well-Tempered Clavier," and "Yowzie," to various old jazz compositions. These two pieces are almost a textbook demonstration of what Tharp achieved in her career. First, the invention of "crossover dance"—that is, classical ballet combined with some other dance form, the latter, when she did it, being a sock-hop sort of boogie. Today, it can be pretty much anything, and is usually just some sort of modern dance.

Then comes the second innovation, more important. Year after year, Tharp turned dancers into geniuses. No one knows how, but there are certain choreographers for whom, magically, dancers who are very good become something much better. Tharp is right up there with Balanchine and Ashton. It's not even technical, though it's that, too. But you can see on their faces: they think she's letting them have a wonderful time. She's also giving them a major workout, which dancers love. When I attended a rehearsal of "Yowzie," Matthew Dibble, one of Tharp's group, was literally pouring sweat—big splats, on the floor—by the end. This wasn't gross. It was marvellous.

—*Joan Acocella*

ILLUSTRATION BY SACHIN TENG

Jean Butler
Twenty years ago, Butler was the female lead of "Riverdance," conquering the world with step-dancing spectacle. In the past decade, she's transplanted herself into the much more austere realm of New York's downtown dance scene. Irish step dance is still what she does, though in an unvarnished, investigatory spirit. For "This Is an Irish Dance," a duet with the Belfast cellist Neil Martin, she zeroes in on the interplay, both sonic and spatial, between dancer and musician. (Danspace Project, St. Mark's Church In-the-Bowery, Second Ave. at 10th St. 866-811-4111. Nov. 17 and Nov. 19-21.)

Twyla Tharp
For the final stop on a fiftieth-anniversary tour, Tharp and her twelve dancers barrel into the Koch Theatre, with a double bill. Both pieces revisit musical territory she has mined before: Bach, in the case of "Preludes and Fugues," and the songs of Jelly Roll Morton, in "Yowzie." The style is pure Tharp—an elegant, hyper-articulate, sometimes manic mix of ballet, all-American vernacular dance, jazz, vaudeville, sports, and a million other things she has picked up along the way. (Lincoln Center. 212-496-0600. Nov. 17-22.)

Complexions Contemporary Ballet
Founded twenty-one years ago by the Ailey stars Dwight Rhoden and Desmond Richardson, this company is an amalgam of its leaders' artistic personalities: high-octane, intense, unrelentingly fierce. (Subtlety is not the company's forte.) It is also a model of diversity, a fact that lends its shows a welcome vitality. This two-week season includes no fewer than five premières by the prolific Rhoden, including a solo for Richardson, "Imprint/Maya," set to words by Maya Angelou and music by the jazz composer David Rozenblatt. That's on Program A (one of three at the Joyce), which also includes a pensive pas de deux by William Forsythe, whose jagged, deconstructed style has had a clear influence on Rhoden. (Joyce Theatre, 175 Eighth Ave., at 19th St. 212-242-0800. Nov. 17-22 and Nov. 24. Through Nov. 29.)

Barnard / Columbia Dances
Students from Barnard and Columbia, many of them with extensive dance training, will perform a mixed bill of works by a quartet of choreographers, including Mark Morris and the veteran postmodernist Molissa Fenley. Of particular interest is Morris's seldom-performed "Canonic 3/4 Studies," an exploration of movement in 3/4 time, set to a medley of piano tunes played live. (New York Live Arts, 219 W. 19th St. 212-924-0077. Nov. 19-21.)

U-Theatre
This Taiwanese company is a Zen marching band. Much of "Beyond Time" is choreographed group drumming. The highly disciplined performers strike suspended gongs, whack thunder in the manner of a taiko troupe, and play handheld drums while moving in shifting formations. In long skirts, they spin like dervishes and chant chorally. Reflective flooring and projected images summon rain, the moon, a starry void. (BAM's Howard Gilman Opera House, 30 Lafayette Ave., Brooklyn. 718-636-4100. Nov. 19-21.)

Paco Peña / "Flamencura"
An evening of Peña is, first of all, a musical experience. There are few (if any) flamenco guitarists who can rival Peña's ability to create imagery through sound, leading the listener on a musical voyage. His shows avoid the bluster and wild-eyed clichés to which the genre is often drawn, creating, instead, an intimate space for musical conversation. "Flamencura" features two dancers, two singers, a percussionist, and Peña on lead guitar, along with two other guitarists. All are excellent; Peña and the dancer Ángel Muñoz are exceptional. (Town Hall, 123 W. 43rd St. 212-840-2824. Nov. 20.)

"The Hip Hop Nutcracker"
Like most familiar stories, "The Nutcracker" lends itself to almost any treatment, as long as the tone is right. Burlesque? Why not! Urban fairytale? Absolutely. In this version, conceived by Mike Fitelson and Jennifer Weber, the action moves to the present and the dance style is hip-hop, in all its dizzying variety. Tchaikovsky's score (taped) is intermixed with hip-hop beats (spun by DJ Boo) and electronic-violin riffs (played live). The magical aspects of the story may be toned down, but its generosity of spirit is unchanged. (United Palace, 4140 Broadway, at 175th St. 800-745-3000. Nov. 20-21.)

Ballet Hispanico
This revitalized troupe's annual shows at the Apollo Theatre are always festive occasions, even if the quality of the new pieces doesn't always equal the high calibre of the dancers. "If Walls Could Speak," a première by Fernando Melo, a Brazilian choreographer who has built a reputation in Europe, is an evocation of his homeland—soccer, samba, inequality, and all—accompanied by live percussion. A family matinée on Saturday combines an excerpt of the new Melo work with other excerpts of lively repertory. (253 W. 125th St. 800-745-3000. Nov. 20-21.)

"Thomas Adès: Concentric Paths—Movements in Music"
With the British composer Adès on piano or conducting the Orchestra of St. Luke's, four choreographers offer takes on his complex, dramatic scores. There's Wayne McGregor's "Outlier," a coldly eccentric ensemble exercise made for New York City Ballet in 2010; Karole Armitage's "Life Story," a pretzelly 1999 duet with wised-up words by Tennessee Williams; and Alexander Whitley's "The Grit in the Oyster," a respectfully flowing trio to Adès's piano quintet. But the big event is Crystal Pite's "Polaris," which matches the enormous scale of Adès's orchestral score with a massive, seething, black-clad mob. (City Center, 131 W. 55th St. 212-581-1212. Nov. 20-22.)

Pilobolus
The changes of puberty can feel disturbingly surreal, but the transformations that occur to the pubescent female protagonist of "Shadowland" are little more than cool effects. Using a silhouette technique that's the full-body equivalent of shadow puppetry, the limber gymnasts of this performance collective ingeniously conjure a dream world of seahorses, centaurs, and elephants. A Monty Pythonesque hand of God gives the girl the head of a dog; despite the indie-rock score by David Poe and Steven Banks, the production stays fully puppyish. (N.Y.U. Skirball Center, 566 LaGuardia Pl. 212-998-4941. Nov. 20-24. Through Dec. 6.)

"Works & Process" / Paul Taylor's American Modern Dance
Last year, Taylor announced that, for the first time in half a century, his company would be opening its doors to works by other choreographers. The next season will include the group's inaugural commissions, by Larry Keigwin and Doug Elkins. Both will be on hand to talk about their ideas, while a group of Taylor dancers performs excerpts. (Guggenheim Museum, 1071 Fifth Ave. 212-423-3575. Nov. 21-22.)

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THE THEATRE

TEAM PLAYER

In her new solo show, Nilaja Sun finds humanity on the Lower East Side.

LAST MONTH, I went to La Mama to check out "The Elephant in Every Room I Enter," a performance piece starring the actor and dancer Gardiner Comfort. The story was unusual, in that its subject was Tourette's syndrome—a condition Comfort was born with. In the course of the well-put-together show—there was nothing self-indulgent about it—Comfort described going to a Tourette's conference in Washington, D.C., an occasion he illustrated with a level of care that was striking, not least because the performance was devoid of sentimentality. Comfort's clear-eyed efforts reminded me of the work of his peer Nilaja Sun.

Like Comfort, Sun is a solo star who manages to rise above the limitations of the solo-show form by bringing in the world that helped to shape her. Raised on Manhattan's Lower East Side, the petite forty-year-old's big smile and energetic appeal helped make her 2006 piece, "No Child . . . ," such a hit—that and her ability to weave multiple characters so indelibly into the story of her life as an instructor of tenth graders in New York's public school system. (Sun won an Obie, and many other awards, for her work.) In "No Child . . . ," Sun described what it was like to put on a play with a bunch of kids who were not so much reluctant as distrustful of the whole process of make-believe.

In "Pike St.," her new ninety-minute solo piece (presented by Epic Theatre Ensemble at Abrons Arts Center, through Dec. 6), Sun makes parenting the more dominant factor, telling the tale of a mother trying to make the best life she can for her disabled daughter, in the face of a changing world. We meet her neighbors, too, including Manny, a Puerto Rican war veteran, and the octogenarian Mrs. Applebaum. Sun offers a look at lives you wouldn't describe as marginalized, because to her they aren't.

—Hilton Als

OPENINGS AND PREVIEWS

China Doll
Al Pacino returns to Broadway in a new play by David Mamet, directed by Pam MacKinnon, as a man with a large fortune and a young fiancée. In previews. (Schoenfeld, 236 W. 45th St. 212-239-6200.)

The Color Purple
Jennifer Hudson, Cynthia Erivo, and Danielle Brooks star in a revival of the 2005 musical, based on Alice Walker's Pulitzer Prize-winning novel and directed by John Doyle. In previews. (Jacobs, 242 W. 45th St. 212-239-6200.)

Fiddler on the Roof
Danny Burstein plays Tevye, the shtetl patriarch, in Bartlett Sher's revival of the 1964 musical, based on the stories of Sholem Aleichem. Previews begin Nov. 20. (Broadway Theatre, Broadway at 53rd St. 212-239-6200.)

Gigantic
Vineyard Theatre presents a new musical by Matthew roi Berger, Randy Blair, and Tim Drucker, about a boy who goes to weight-loss camp in Pennsylvania. In previews. (Acorn, 410 W. 42nd St. 212-239-6200.)

The Illusionists—Live on Broadway
The sleight-of-hand spectacle returns for a holiday engagement, featuring seven magicians. Opens Nov. 19. (Neil Simon, 250 W. 52nd St. 877-250-2929.)

Invisible Thread
Diane Paulus directs Matt Gould and Griffin Matthews's musical, in which a young New Yorker volunteers in Uganda. In previews. (Second Stage, 307 W. 43rd St. 212-246-4422.)

Lazarus
Ivo van Hove directs a new musical by David Bowie and Enda Walsh, inspired by "The Man Who Fell to Earth" and starring Michael C. Hall, Cristin Milioti, and Michael Esper. Previews begin Nov. 18. (New York Theatre Workshop, 79 E. 4th St. 212-460-5475.)

Marjorie Prime
In Jordan Harrison's play, directed by Anne Kauffman and set in the near future, an elderly woman uses artificial intelligence to review her life story. Previews begin Nov. 20. (Playwrights Horizons, 416 W. 42nd St. 212-279-4200.)

New York Animals
Bedlam presents a new play by Steven Sater ("Spring Awakening"), featuring songs by Sater and Burt Bacharach, in which four actors play twenty-one New Yorkers on a rainy day. In previews. (New Ohio, 154 Christopher St. 866-811-4111.)

ILLUSTRATION BY SEÑOR SALME

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ALSO NOTABLE

AN AMERICAN IN PARIS
Palace

CLEVER LITTLE LIES
Westside

THE COMEDY OF ERRORS
Public. Through Nov. 22.

DAMES AT SEA
Helen Hayes

DEAR ELIZABETH
McGinn/Cazale

ECLIPSED
Public

FIRST DAUGHTER SUITE
Public. Through Nov. 22.

THE FLICK
Barrow Street Theatre

FOOL FOR LOVE
Samuel J. Friedman

FUN HOME
Circle in the Square

FUTURITY
Connelly. Through Nov. 22.

THE GIN GAME
Golden

HAMILTON
Richard Rodgers

HAND TO GOD
Booth

HENRY IV
St. Ann's Warehouse

THE HUMANS
Laura Pels

INCIDENT AT VICHY
Pershing Square Signature Center. (Reviewed in this issue.)

THE KING AND I
Vivian Beaumont

LORD OF THE DANCE: DANGEROUS GAMES
Lyric

MISERY
Broadhurst

NEIGHBORHOOD 3: REQUISITION OF DOOM
Flea

OLD TIMES
American Airlines Theatre

ON YOUR FEET!
Marquis

PIKE ST.
Abrons Arts Center

RIPCORD
City Center Stage I

SONGBIRD
59E59

SPRING AWAKENING
Brooks Atkinson

SYLVIA
Cort

THÉRÈSE RAQUIN
Studio 54

UGLY LIES THE BONE
Roundabout Underground

A VIEW FROM THE BRIDGE
Lyceum. (Reviewed in this issue.)

Night Is a Room

In Naomi Wallace's play, directed by Bill Rauch, the lives of a married couple are shattered on the man's fortieth birthday. In previews. Opens Nov. 22. (Pershing Square Signature Center, 480 W. 42nd St. 212-244-7529.)

Once Upon a Mattress

Jackie Hoffman and John (Lypsinka) Epperson star in the Mary Rodgers musical about the princess and the pea, revived by Transport Group and directed by Jack Cummings III. Previews begin Nov. 23. (Abrons Arts Center, 466 Grand St. 212-352-3101.)

School of Rock

Alex Brightman plays a rocker who poses as a substitute teacher, in this new musical based on the 2003 movie, with music by Andrew Lloyd Webber, lyrics by Glenn Slater, and a book by Julian Fellowes. In previews. (Winter Garden, Broadway at 50th St. 212-239-6200.)

Steve

The New Group presents Mark Gerrard's play, directed by Cynthia Nixon, about a former Broadway chorus boy entering middle age. With Mario Cantone, Matt McGrath, and Malcolm Gets. Opens Nov. 18. (Pershing Square Signature Center, 480 W. 42nd St. 212-279-4200.)

These Paper Bullets!

Billie Joe Armstrong and Rolin Jones wrote this musical adaptation of "Much Ado About Nothing," reset in Beatles-era London and directed by Jackson Gay. Previews begin Nov. 20. (Atlantic Theatre Company, 336 W. 20th St. 866-811-4111.)

NOW PLAYING

Allegiance

The "Star Trek" icon George Takei spent part of his childhood in Japanese-American internment camps, giving him a unique credibility to relate this egregious chapter in America's history, so contrary to its sunny self-image during the Second World War. What a shame, then, that this musical, inspired by his experiences and written by Marc Acito, Jay Kuo, and Lorenzo Thione, is so resolutely trite. In telling the story of Sammy (Telly Leung) and Kei (the silver-voiced Lea Salonga), a brother and sister sent to a Wyoming "relocation center," Kuo matches treacly music with greeting-card lyrics ("Wishes on the wind / are wishes that we share"), obscuring dark political truths with a mawkish romance. Playing an immigrant grandfather and, in a framing device, the older Sammy, Takei provides more humor and gravitas than the authors or the director, Stafford Arima, can muster. (Longacre, 220 W. 48th St. 212-239-6200.)

Before Your Very Eyes

As the audience enters, seven child actors play age-old games in a mirrored room—jacks, pick-up sticks, blind man's bluff—until a disembodied voice orders them to "grow up." The children do their best to comply, first with goofy attempts to stretch themselves bigger, then by playing dress-up, as the voice urges them on. In the show's cleverest device, the actors intermittently engage in dialogue with videos of themselves which were recorded when they were even younger. They muse on death, young dreams, and the death of young dreams, all of which is undoubtedly poignant to hear from the mouths of babes, but perhaps too easily so. A vague tone of reproach predominates. Pop songs have too big a role in setting the mood. The premise of this Gob Squad production is splendid, but the ramshackle execution rarely feels more revelatory than an hour at the playground. (Public, 425 Lafayette St. 212-967-7555.)

Dada Woof Papa Hot

The playwright Peter Parnell—perhaps best known as a co-author of the frequently banned children's book "And Tango Makes Three"—explores the highs and lows of same-sex parenting in the age of Obergefell v. Hodges. Alan (John Benjamin Hickey), a freelance writer and reluctant papa, grapples with the gamut of modern gay parental anxieties, from feeling underloved as a non-biological father to the sinking sense that a once transgressive relationship has turned utterly conventional. They're all worthy and timely concerns, enacted by sympathetic performers, and the production flows as smoothly as John Lee Beatty's sleek sliding sets. But it would feel a lot more powerful if the play itself weren't so conventional; every detail is relentlessly typical of the same old upper-middle-class Manhattan, and the script doesn't manage a single surprise. (Mitzi E. Newhouse, 150 W. 65th St. 212-239-6200.)

Hir

When we first meet Arnold, a fiftysomething father (played, with beautiful timing, by Daniel Oreskes), he is dressed in a loud, frilly nightgown, his face covered with gobs of makeup, like a third-rate clown's. Arnold hardly knows how or when to move without instructions from his wife, Paige (Kristine Nielsen). These she provides with condescending relish, which the couple's son Isaac (Cameron Scoggins), a marine who hasn't spoken to his family for a year, finds as bewildering as we do. He knows that Arnold had a stroke, but why is she feeding him estrogen? Arnold was, to some extent, Isaac's ideal of manhood, and what happens when our ideals are rendered impotent? Taylor Mac's play, sensitively directed by Niegel Smith, is saved from potential proselytizing by Mac's awareness that his arguments have to grow in complexity in order for his characters to grow, and by Nielsen's pained and profound performance. (Reviewed in our issue of 11/16/15.) (Peter Jay Sharp, 416 W. 42nd St. 212-279-4200.)

King Charles III

Mike Bartlett is a very talented playwright; the second act of this production is one of the best things you'll see in the contemporary theatre about how power defines us. The first act is a little one-note. The conceit is this: after Queen Elizabeth II dies, her son, Charles (the well-cast Tim Pigott-Smith), is set to inherit the throne, but his son Prince William (Oliver Chris) is married to a very ambitious Kate Middleton (Lydia Wilson), who thinks her husband should be crowned King sooner rather than later. (She's part of that new generation that doesn't like waiting around for anything.) Charles and his love, Camilla (Margot Leicester, excellent in a small role), are aghast at being swept under the rug. Wonderfully played and spoken in blank verse, the play has a great script that would have had more intensity as a one-act; that would have allowed Bartlett's craft to be really heard and felt throughout. Instead, it's diffused by a subplot about a party-boy Prince Harry (Richard Goulding) and his ambivalent punk girlfriend, Jess (Tafline Steen). But these large and small criticisms can't take away from Bartlett's exciting voice. (Music Box, 239 W. 45th St. 212-239-6200.)

Lost Girls

A young woman in peril fuelled John Pollono's last play, "Small Engine Repair," and he repeats the motif in his newest, again at MCC. Somewhere in New Hampshire, where the accents are chowder-thick, a teen-age girl, Erica, has gone missing during a snowstorm. The girl's mother, Maggie (Piper Perabo); her grandmother Linda (Tasha Lawrence); her father, Lou (Ebon Moss-Bachrach), a state trooper long divorced from Maggie; and his chipper new wife, Penny (Meghann Fahy), try to track Erica down amid power outages and cell-tower failures. Elsewhere, a boy and a girl huddle in a motel room. Is the girl Erica? Maybe yes, maybe no. There's something pat about Pollono's writing—you could set your watch to the metronomic revelation of the characters' secrets and vulnerabilities. But, under Jo Bonney's direction, the actors have a fine time and the sentimental ending nearly feels earned. (Lucille Lortel, 121 Christopher St. 212-352-3101.)

MOVIES

NOW PLAYING

Bridge of Spies

The new Steven Spielberg film starts in 1957, with the arrest of a Soviet spy named Rudolf Abel (Mark Rylance) in Brooklyn. The man assigned to defend him is James B. Donovan (Tom Hanks), a local insurance lawyer—trusted, experienced, and thought unlikely to cause a stir. Yet Donovan turns out to be a stubborn soul, who fights against the death penalty for his client and takes his argument all the way to the Supreme Court. Although such perseverance wins him few friends, endangers his family, and dismays his wife (Amy Ryan), it pays off when an American pilot is downed in Soviet airspace. Donovan is asked to travel to Berlin to get the pilot back, in exchange for Abel. As you would expect from Spielberg, the tale is securely told, with tautness and skill; what lifts it above some of his other historical dramas is a touch of comic friction—courtesy of a smart script written by Joel and Ethan Coen, in league with Matt Charman. Hanks, as limber as ever, is required to square off against the restrained Rylance, who makes Abel a witty and formidable foe. Somehow, his kinship with Donovan offers a brief glow of warmth amid the snows of the Cold War.—*Anthony Lane* (Reviewed in our issue of 10/26/15.) (In wide release.)

Brooklyn

Eilis (Saoirse Ronan) lives in a small Irish town with her mother (Jane Brennan) and sister (Fiona Glascott). The time is the nineteen-fifties, and Eilis is leaving for America—not in any spirit of rebellion, since she is a mild and uncomplaining soul, but because the Church has organized the move. John Crowley's movie follows her across the sea and into a brave new world, yet her life in Brooklyn is as plain and regular as the one she knew at home. She works in a department store, lives in a respectable boarding house (the motherly landlady is played by Julie Walters), and falls for a local Italian plumber (Emory Cohen). Circumstances send her back to Ireland, and there she meets another young man (Domhnall Gleeson), who courts her with no less politeness than was shown by his counterpart in New York. But which should she choose? And why does that choice not feel like more of a wrench? Nick Hornby's screenplay is poised and acute, but, in adapting Colm Tóibín's novel, he is stuck with a dangerously undramatic tale, and Crowley's direction is sedate to a fault. While the leads, especially Cohen, acquit themselves with grace, the smaller performances stay with you—Eva Birthistle, as a brassy shipmate, and Jessica Paré, as Eilis's elegant boss.—*A.L.* (In limited release.)

By the Sea

Romantic doom hangs heavy in the sun-streaked, blue-tinged air of the French Mediterranean coastline in this erotic melodrama, set in the early nineteen-seventies, written and directed by Angelina Jolie Pitt. She and Brad Pitt play the married couple Vanessa and Roland Bertrand, troubled New York artists. An acclaimed dancer, Vanessa retired owing to age, and now spends her time berating Roland, a celebrated but blocked writer, for the sake of whose inspiration they take a seaside hotel room in France for the summer. There, they become obsessed with a newlywed couple, Lea and François (Mélanie Laurent and Melvil Poupaud), whom they drag into their reckless sexual games. Working with the cinematographer Christian Berger, Jolie Pitt frames the actors in locked-down, off-balance images that evoke wide-eyed terror at the movie's voracious cruelty as well as pride in its confessional agonies. Unfortunately, the actors aren't unhinged enough for the scathing conceit, and the script is more of a mechanism than a revelation. Nonetheless, Jolie Pitt makes a more daring and successful effort at visual invention than do many more celebrated filmmakers, and she ventures with an admirable boldness into mysterious and alluring psychological territory.—*Richard Brody* (In wide release.)

Entertainment

The director Rick Alverson gives the age-old trope of the unfunny comedian an extreme new twist in this puckishly aggressive drama. Gregg Turkington, who performs under the name Neil Hamburger, plays a comedian who himself adopts the persona of an awkward, hangdog standup artist, with an intentionally repellent greasy comb-over, whose wheezy riddles are embarrassing and offensive. Booked in depressing venues, performing for crowds that number in the high single digits, the comedian responds to hecklers with ugly sexual invective that makes Don Rickles seem like Mister Rogers. Dreary adventures in sad motels and dank public restrooms clash with the bedraggled purity of the comedian's oblivious strivings and thwarted dreams. Alverson films a lonely tour in the California desert with poised wide-screen images that lend his grubby wanderings the mythic grandeur of a classic Western. The film is both jagged and suave, like an orchestrated concept album by a garage band. The cast—including John C. Reilly, as the performer's prosperous cousin (who advises him to cut the references to semen), Michael Cera, Dean Stockwell, Amy Seimetz, and Dustin Guy Defa—completes Alverson's full-circle union of underground exotica and Hollywood legend.—*R.B.* (In limited release.)

Gun Crazy

This exemplary film noir, from 1950, has a flamboyantly Freudian premise: Bart Tare, an orphaned boy, is obsessed with firearms. He feeds that obsession by burglarizing a store. An expert marksman, he returns from reform school and a stint in the Army to his home town, where he has nothing to do—until he meets and falls for Laurie Starr, a carnival sharpshooter whose act he first upstages and then joins. They quit the troupe and marry, but they can't settle down; Laurie dreams of luxury and forces Bart to team up with her in a series of armed robberies, at which Bart proves all too skilled. The already-classic trope of lovers on the run, à la Bonnie and Clyde, gets a stylish workout from the director Joseph H. Lewis. His sly and insinuating angles lend the power of violence and the threat of death a sexual charge. The gritty texture of the on-location filming in Southern California heightens the arch wonder of the couple's criminal schemes, as in the movie's famous three-minute take, of a robbery filmed in real time from inside the getaway car. It's a brilliant metaphor for confinement and isolation—for the trap of love and money—yet Lewis can hardly conceal his delight.—*R.B.* (Museum of the Moving Image; Nov. 20-21.)

How Green Was My Valley

Forever known as the movie that beat out "Citizen Kane" for the Best Picture Oscar in 1941, John Ford's Welsh family saga, set in a nineteenth-century coal-mining village, resembles Orson Welles's début in surprising ways. This, too,

OPENING

CAROL
Reviewed this week in The Current Cinema. Opening Nov. 20. (In wide release.)

THE HUNGER GAMES: MOCKINGJAY-PART 2
The final installment of the franchise, starring Jennifer Lawrence as Katniss Everdeen, the young warrior who rebels against the oppressive authorities ruling the dystopian Panem. Directed by Francis Lawrence; co-starring Josh Hutcherson, Liam Hemsworth, Woody Harrelson, and Elizabeth Banks. Opening Nov. 20. (In wide release.)

LEGEND
Reviewed this week in The Current Cinema. Opening Nov. 20. (In limited release.)

MUSTANG
Reviewed in Now Playing. Opening Nov. 20. (In limited release.)

THE NIGHT BEFORE
A comedy, about three lifelong friends (Seth Rogen, Joseph Gordon-Levitt, and Anthony Mackie) who wander through New York in search of a great Christmas party. Directed by Jonathan Levine; co-starring Lizzy Caplan, Miley Cyrus, Michael Shannon, and Mindy Kaling. Opening Nov. 20. (In wide release.)

SECRET IN THEIR EYES
In this thriller, an F.B.I. agent (Chiwetel Ejiofor) investigates the killing of a colleague's child. Directed by Billy Ray; co-starring Julia Roberts and Nicole Kidman. Opening Nov. 20. (In wide release.)

VERY SEMI-SERIOUS
Leah Wolchok directed this documentary, about the cartoonists and cartoon department at *The New Yorker*. Opening Nov. 20. (In limited release.)

EVERETT

MOVIE OF THE WEEK
A video discussion of Luis Buñuel's "Tristana," from 1970, in our digital edition and online.

In the high-energy action comedy "1941" (screening Nov. 20 at BAM Cinématek), from 1979, Steven Spielberg let his cinematic crazies out, and he had just the actor to help him: John Belushi. The "Saturday Night Live" legend plays a trigger-happy Army pilot who wreaks merry havoc while stationed in Los Angeles.

is a flashback movie, and one that captures an idyll of youth that has been lost to the corrosive practices of modern business. The story is told by the fifty-year-old Huw Morgan, who leaves a town that's been destroyed—environmentally, morally, and socially—by its colliery. Huw recalls his childhood (he's played by the young actor Roddy McDowall); his five strapping brothers and his father, miners all; his fierce and steadfast mother; and, most of all, his sister, Angharad (Maureen O'Hara), whose burgeoning romance with the hearty new pastor (Walter Pidgeon) is the backbone of the drama. Ford depicts a working-class solidarity based on morality, tradition, and community; he conveys his nuanced and tender sociology with surprising sound effects and expressionistic tableaux that feature the sort of angles that made Welles famous (and which the younger man borrowed, in turn, from Ford's "Stagecoach").—*R.B.* (MOMA; Nov. 18.)

Imitation of Life

For his last Hollywood film, released in 1959, the German director Douglas Sirk unleashed a melodramatic torrent of rage at the corrupt core of American life—the unholy trinity of racism, commercialism, and puritanism. The story starts in 1948, when two widowed mothers of young daughters meet at Coney Island: Lora Meredith (Lana Turner), an aspiring actress, who is white, and Annie Johnson (Juanita Moore), a homeless and unemployed woman, who is black. The Johnsons move in with the Merediths; Annie keeps house while Lora auditions. A decade later, Lora is the toast of Broadway and Annie (who still calls her Miss Lora) continues to maintain the house. Meanwhile, Lora endures troubled relationships with a playwright (Dan O'Herlihy), an adman (John Gavin), and her daughter (Sandra Dee); Annie's light-skinned teen-age daughter, Sarah Jane (Susan Kohner), is working as a bump-and-grind showgirl and passing as white, even as whites pass as happy and Annie exhausts herself mastering her anger and maintaining her self-control. For Sirk, the grand finale was a funeral for the prevailing order, a trumpet blast against social façades and walls of silence. The price of success, in his view, may be the death of the soul, but its wages afford retirement, withdrawal, and contemplation—and, upon completing the film, that's what Sirk did.—*R.B.* (Film Society of Lincoln Center; Nov. 20.)

In Jackson Heights

Either residents of this Queens neighborhood really do spend most of their time in group meetings or the director Frederick Wiseman's new documentary pays exceptional attention to the occasions on which they do. In any case, Wiseman's very subject is the difference between neighborhood and community—between the happenstance of urban geography and the commitment of self-identification. His trenchant images meticulously parse discussions among residents of many backgrounds and speakers of many languages—for the most part, members of distinctive groups meeting among themselves. Living side by side, the communities of Jackson Heights appear to connect only by chance. Wiseman's emphasis is on gay residents, whose mutual support is energized by the memory of the murder there, in 1990, of Julio Rivera by a gay-basher, and on Hispanic residents, including local merchants facing displacement due to gentrification and others who struggle against the threat of deportation. The heart of the film is an organized discussion on the experience of immigration; one woman's grandly intricate description of her daughter's harrowing journey through the desert to cross the border displays a passionate commitment to something larger than Jackson Heights—to American life itself.—*R.B.* (In limited release.)

James White

This pain-filled, heartfelt drama, about a young man who is thrown for a loop by his mother's illness and his father's death, plays more like a visualized script treatment than a fleshed-out movie. Christopher Abbott stars, in the title role, as an Upper West Sider who has been living with his mother, Gail (Cynthia Nixon), and helping her through her cancer treatments, when his estranged father dies suddenly. Gail magnanimously mourns her ex, but James is—and already was—a wreck. He's partying hard and not working, and he heads to Mexico with his friend Nick (Scott Mescudi) for a vacation from nothing. There, he gets involved with a New York high-school girl, Jayne (Makenzie Leigh), and when he returns home to resume caring for his mother he and Jayne continue the relationship, even as he squanders his opportunities. The writer and director, Josh Mond, places dramatic weight on Gail's health, giving Nixon a chance to shine in a role of great suffering, but his images, with their stolidly lurid realism, are not much more than downbeat mood music. As scripted, James has so few distinguishing traits that this potential bourgeois Everyman comes off as nobody in particular.—*R.B.* (In limited release.)

The Mark of Zorro

Douglas Fairbanks's first great acrobatic epic, from 1920, set the standard for zesty swashbucklers. As Spanish California's masked avenger, with a foppish cover identity and a propensity for swooping down on his enemies out of nowhere, Zorro is Robin Hood, the Scarlet Pimpernel, and Batman rolled into one. Fairbanks didn't need a molded bodysuit or special effects to give the audience a charge: he did it with comic showmanship and physical exuberance. In Zorro's bouts with the evil governor and his minions, Fairbanks accents the "play" in swordplay, and never merely runs when he can gambol; he leads bad guys on a merry chase. And if he's extravagantly cunning as Zorro, he's furtively cunning as the dandified Don Diego, especially when he acts the fool by courting the beautiful Lolita (Marguerite de la Motte) with parlor tricks. Directed by Fred Niblo; the solid cast includes Noah Beery and Robert McKim.—*Michael Sragow* (MOMA; Nov. 19.)

ILLUSTRATION BY DANIEL KRALL

The Martian
In Ridley Scott's science-fiction drama, Mark Watney (Matt Damon), an astronaut on a Martian mission, is abandoned, presumed dead, when the rest of his crew, menaced by a wild storm, has to skedaddle and head back home. Declining to despair, Watney, a botanist by trade, sets about growing food and sitting out his years of solitude. Scott's movie, boosted by a chipper performance from Damon, feels anything but cramped; it revels not just in the finicky joys of ingenuity, as "Apollo 13" did, but, against the odds, in a kind of comic expansiveness. The script, by Drew Goddard, is adapted from the book of the same name by Andy Weir, and there is fine support from two quarters: first, from Jeff Daniels, Chiwetel Ejiofor, and Kristen Wiig, as some of the surprised and worried honchos back at NASA; and, second, from Jessica Chastain as the captain of the mission, who has to decide whether to swing round to the red planet and pick up her lost friend.—*A.L.* (10/12/15) (In wide release.)

Miss You Already
Vomit, scars, injections, drainage, MRIs—the raw physicality of disease is at the core of the director Catherine Hardwicke's otherwise soft-pedalled drama of friendship and loss. The script, by Morwenna Banks, tells the story of two lifelong friends, Jess (Drew Barrymore), an American who immigrated to Great Britain as a child, and Millie (Toni Collette), a native of London. Jess, a community activist, and her husband, Jago (Paddy Considine), an oil-rig laborer, live on a cramped but funky houseboat and struggle with infertility. Millie, a P.R. executive, and her husband, Kit (Dominic Cooper), an audio entrepreneur, live in comfort with their two young children. Millie is given a diagnosis of breast cancer, and Hardwicke details her treatments and her sufferings—bodily and emotional—unflinchingly. Unfortunately, the clichéd tale never looks at the substantive sympathies that bind friends together, despite Hardwicke's attention to the women's unsqueamish physical closeness. There's a tough-minded drama struggling to break through the movie's glossy veneer—a contemplation of the black hole of death that, sooner or later, becomes the center of life. With Jacqueline Bisset, as Millie's mother, Miranda, an actress.—*R.B.* (In wide release.)

Mustang
The Turkish-born, French-based director Deniz Gamze Ergüven returns to her native country for this story of five orphaned sisters, ranging in age from late childhood to early adolescence, who become victims of Islamic orthodoxy. After the girls are seen harmlessly frolicking with boys, the malicious accusations of a pious gossip get back to their guardian—their uncle—who literally locks his nieces in their grandmother's home, keeping them out of school and arranging marriages for them. But the girls rebel, with consequences ranging from liberation to tragedy. Despite the local specifics, Ergüven's essentially apolitical story suggests repression—and violence—arising from the efforts of any religion, ideology, or family to control women's sexuality. There's nothing especially original or distinctive in Ergüven's aesthetic. She gets appealing and fiercely committed performances from the five young actresses at the story's center, but above all she effectively stokes righteous anger at a situation that admits no clear remedy other than mere escape. In Turkish.—*R.B.* (In limited release.)

Our Brand Is Crisis
Sandra Bullock's spirited performance as Jane Bodine, an American political consultant recruited to help an out-of-touch patrician run for President of Bolivia, can't do much to rescue the heavy-handed satire and its blandly predictable sensibility. In this fictionalized adaptation of Rachel Boynton's 2005 documentary of the same title, Jane, who had been burned by some bad electoral defeats, overcomes her initial misgivings and flings herself into the race with febrile energy. She's endearingly overwhelmed by the thin atmosphere in the high altitude of La Paz and stymied by the language barrier, but her competitive spirit is sparked by the arrival of her onetime lover and longtime nemesis, Pat Candy (Billy Bob Thornton), in an opposing candidate's corner. The director, David Gordon Green, has little feel for the movie's comic turns, and his way with the drama is held back by his obvious and conventional sympathies. The political background on which the story runs is sketched thinly; curiosity about Bolivian life is shunted off to a few lines of dialogue and an abundance of folkloric costumes. With Ann Dowd and Zoe Kazan, as Jane's colleagues, and Joaquim de Almeida, as her candidate.—*R.B.* (In wide release.)

Spectre
The James Bond franchise, which briefly felt, in "Skyfall," as though it might be reaching some kind of conclusion, is revived anew. This time, there is

trouble back at the base. 007 (Daniel Craig), M (Ralph Fiennes), Q (Ben Whishaw, in resplendent knitwear), and Moneypenny (Naomie Harris) find themselves beleaguered, as a reptilian chief of intelligence (Andrew Scott) threatens to limit the scope of MI6 and, in the process, to cramp Bond's style. Our hero, needless to say, is undeterred. He embarks on a spree, taking in Mexico City, Rome, an Austrian peak, and the Algerian desert, before returning to London for a somewhat gloomy finale, which even includes (for devotees of "Goldfinger") a bomb with an old-fashioned countdown. His lovers are played by Léa Seydoux and, much too fleetingly, Monica Bellucci; his opposite number in combat is Mr. Hinx (Dave Bautista); and the goal of Bond's exploring turns out to be Oberhauser (Christoph Waltz), the latest—and, we are assured, the most lethal—of his countless nemeses. The movie, directed by Sam Mendes, is long and lavish, and Craig continues to look bruised and hostile in his tightly buttoned suits. For every viewer who revels in the breathless action, however, there may be others who find it pointless—all that momentum, heading nowhere in particular. Bond's license to kill is a reason for staying alive, but is it enough?—*A.L.* (11/16/15) (In wide release.)

Spotlight
There are many ways in which the new Tom McCarthy film could have gone wrong. The subject could hardly be thornier: the uncovering, by an investigative team at the Boston *Globe*, of widespread sexual abuse by Catholic priests. The victims were children, but we meet them as adults, when they tell their stories. The movie, scripted by McCarthy and Josh Singer, resists any temptation to reconstruct the original crimes, and the sole focus is on the progress of the journalistic task. The result is restrained but never dull, and, barring a couple of overheated moments, when a character shouts in closeup, we don't feel harried or hectored. The film becomes a study in togetherness, both bad and fruitful; on one hand, we get the creepy sense of a community closing ranks, while on the other there is the old-school pleasure of watching an ensemble in full spate. The reporters are played by Michael Keaton, Brian d'Arcy James, Mark Ruffalo, and Rachel McAdams; their superiors, by John Slattery and Liev Schreiber; and the lawyers, by Billy Crudup and Stanley Tucci, who, as usual, calmly pockets every scene in which he appears.—*A.L.* (11/9/15) (In limited release.)

Suffragette
This historical drama, set in London in 1912, is centered on Maud Watts (Carey Mulligan), a twenty-four-year-old laundress who seems to have never given a thought to her voting rights until she gets caught in a protest. Befriended by an activist colleague and motivated by rage at sexual abuse in the workplace, Maud becomes increasingly involved in the suffrage movement. After her arrest and imprisonment, her husband (Ben Whishaw) pries their child (Adam Michael Dodd) away from her, and Maud becomes ever more militant. The movie's sharp focus on the connection between women's subjugation at work and at home and their lack of a vote—on the injustice of laws that women can't vote to change—is unfortunately not matched by the drama. Maud—like her colleagues, her opponents, and even the movement's charismatic leader, Emmeline Pankhurst (Meryl Streep)—remains a cipher. The script, by Abi Morgan, filters out the contextual complexities of politics, and Sarah Gavron's direction reduces difficult situations to simple sentiments. With Helena Bonham Carter, as a principled pharmacist, and Brendan Gleeson, as a wily police inspector.—*R.B.* (In limited release.)

Trumbo
Jay Roach's film is an act of homage to Dalton Trumbo's enviable fluency as a screenwriter, and to his courage in clinging to his principles. Trumbo (Bryan Cranston) was a Communist, and was prepared to admit as much to his daughter Nikola (finely played, as a young girl, by Madison Wolfe and, later, by Elle Fanning), though not when compelled to do so, in public, by the House Un-American Activities Committee. For his recalcitrance, he was blacklisted, left without decent work, and jailed. The movie tracks him over many years, during which he is supported by a loving wife (Diane Lane) and pestered by Hedda Hopper (Helen Mirren), who comes across as malice in a hat. The hero's staying power is both his greatest virtue and the film's impediment; very little seems to change, aside from his temper and his growing intake of alcohol. Meanwhile, much fun is had in minor parts. Michael Stuhlbarg plays Edward G. Robinson; Dean O'Gorman is a decent Kirk Douglas; Christian Berkel makes it bitingly clear why no one could say no to Otto Preminger; and, if David James Elliott aims at John Wayne (an impossible task) and misses, there is always John Goodman, as a bullish producer.—*A.L.* (11/9/15) (In limited release.)

ABOVE & BEYOND

Cranksgiving
As the holiday season draws nearer and New Yorkers consider all the things for which they're grateful (and all the gifts for which they won't be), those who are less lucky come into sharper view. Still, not everyone is morally stirred by a simple can drive, donation pledge, or soup-kitchen sign-up sheet. Some need adventure with their altruism. Cranksgiving bills itself as "part bike ride, part food drive, part scavenger hunt," calling on city residents to whiz between markets while ticking off a grocery list, the contents of which are donated to the Bowery Mission. It's a fun concept for a noble cause, and it's fed hundreds of families each Thanksgiving since its inception, in 1999. (Hudson Yards, 11th Ave. and 24th St. cranksgiving.org. Nov. 21 at 1:30.)

AUCTIONS AND ANTIQUES
More works from the seemingly bottomless art collection of A. Alfred Taubman, the late chairman of **Sotheby's,** go under the gavel at the house this week, amid a full day devoted to American nineteenth- and early-twentieth-century art (Nov. 18). A dedicated sale includes a sumptuous Southern landscape—with blood-red clouds reflected in the dark waters of a marsh—entitled "Great Florida Sunset," by the nineteenth-century luminist painter Martin Johnson Heade. (The painting once hung in Taubman's Palm Beach home.) On the following day (Nov. 19), the house turns its sights on Latin American modern and contemporary art, led by a decadent Surrealist canvas ("El Juglar") by the English-born Mexican painter Leonora Carrington, the subject of a recent retrospective at Tate Liverpool. Like a cross between Hieronymus Bosch and the Douanier Rousseau, Carrington creates an alternate universe populated by hybrid creatures, half-man, half-beast, frolicking in a fantastical landscape. (York Ave. at 72nd St. 212-606-7000.) • **Christie's** covers much of the same territory, beginning with an auction of American art on Nov. 19 and moving on to the work of Latin American artists on Nov. 20-21. Among the American works is a sizeable canvas by Norman Rockwell, "Norman Rockwell Visits a Country Editor," being sold off by the National Press Club Journalism Institute. (Rockwell included a self-portrait within the painting, in the form of a gawky young man clutching a large portfolio.) The two-day Latin American sale that follows includes works by the Uruguayan abstract painter Joaquín Torres-García, the Mexican Expressionist Rufino Tamayo, and the ever-present Botero. (20 Rockefeller Plaza, at 49th St. 212-636-2000.) • Latin American art of more recent vintage, including works by Gabriel Orozco, Beatriz Milhazes, and Doris Salcedo, predominates in a sale at **Phillips** on Nov. 18. (450 Park Ave. 212-940-1200.)

READINGS AND TALKS
Symphony Space
It's an image almost too perfect to conjure: a nine-year-old Joyce Carol Oates, nestled under a tree in a back yard somewhere upstate, craning over a copy of "Alice's Adventures in Wonderland" gifted to her by her grandmother. A hundred and fifty years after Lewis Carroll published "Alice," Oates credits it as "the singular book that changed my life—that made me yearn to be a writer," as she details in her just-released memoir, "The Lost Landscape: A Writer's Coming of Age." To help celebrate the anniversary, Oates will read selections from and inspired by the work, alongside the actors Dan Stevens, Ari Graynor, Linda Lavin, and B. D. Wong. (2537 Broadway. 212-864-5400. Nov. 18.)

Rizzoli Bookstore
A tale as old as time, or at least the mid-nineties: an old New York—gritty, hand-stitched, embossed with the identities of longtime inhabitants—is erased in lieu of something newer, shinier, and somehow less photogenic. The topic is so fruitful that, after publishing an acclaimed 2008 hardcover that catalogued dozens of mom-and-pop businesses throughout the boroughs, the photographers James and Karla Murray have produced a sequel. "Store Front II" furthers the work of its predecessor, gathering photographs and interviews that celebrate scraggly awnings and weathered brick and mortar with an awe typically reserved for the Big Apple's famous landmarks. Karen Loew, of the Greenwich Village Society for Historic Preservation, will pick the authors' brains about what fell before their lenses. (1133 Broadway. 212-759-2424. Nov. 23.)

AMAZING THINGS ARE HAPPENING HERE
AMAZING IS BEING ASKED THE RIGHT QUESTIONS.
Kieran Holohan is a living example of precision medicine in action. Diagnosed with Acute Myeloid Leukemia (AML), he was initially given a 30% chance of survival, and that only after a risky bone marrow transplant. Dr. Gail Roboz at NewYork-Presbyterian took a different approach. Additional testing on Kieran's marrow uncovered a rare mutation in his leukemia cells. With this mutation, his chance of a cure would be just as high with chemotherapy as with a bone marrow transplant, and he was able to avoid the procedure altogether. As he himself puts it, "Dr. Roboz asked the right questions. And the answers were there. She did it by throwing the playbook out the window."
NewYork-Presbyterian
nyp.org/amazingthings

FOOD & DRINK

TABLES FOR TWO

VIRGINIA'S

647 E. 11th St. (212-658-0182)

THE SUBTLE PUNGENCY OF ACID—A glug of red wine in beef stew, capers in pasta, a squirt of lime across a taco—can give an ordinary dish a mouth-watering brightness. This particular technique is on wide display at Virginia's, a new restaurant in Alphabet City from the chef Christian Ramos and the owner Reed Adelson, who worked together at Charlie Trotter's, in Chicago. From cocktails through dessert, the pleasing sweet-and-sour flavors conferred by fruit, vinegar, and even cheese appear in practically every dish. But, applied as a universal device, the trick results in taste-bud strain.

It's enough to induce longing for simple bread and butter. Instead, there's a starter of two small toasts spread with tangy La Tur goat cheese, covered with chunks of Honeycrisp apple and sunflower seeds—currants are uncalled for but fun, each berry bursting in the mouth like roe. One way to mute acidity is with fat, a tactic Ramos puts to beautiful use in duck rillettes, which play nicely with pickled pole beans and Concord-grape compote. Recently, vinaigrettes factored into a small plate of caramelized romanesco as well as a salad of red-oak lettuces, and were unnecessary and excessive, respectively. Seared cuttlefish with braised kale was leavened with Moroccan olives and chunks of sourdough bread, lest we get a taste of the ocean creature.

The larger dishes at Virginia's are better equilibrated, with the exception of a butternut-squash risotto so soupy and sweet that even fishing for the meaty porcini and pecans was dispiriting (the rice was completely lost to a puddle of sauce). Ramos's technical execution is impressive, and his strongest suit is proteins, cooked to tender perfection. The diver scallops, with Meyer lemon and Seckel pear, and the chicken breast, with fig jam and small, red sweet peppers, were both moist and silken—they could have been served stark naked, their fruity garnishes mere distraction.

Dessert should be an adventure, not a difficult challenge, and though nothing on the menu from Lauren Calhoun (another chef imported from the Windy City) is too traditional, neither is it too satisfying. The subtlety of raw honey and panna cotta was bulldozed by zesty apricot and sharp ginger, as though someone had turned the contrast way up. And there is no chocolate to be found, unless you count that insidious imposter white chocolate, meekly dolloped over profiteroles and duking it out with inexplicable cashews and apple butter. But there's hope for Virginia's: the menu changes seasonally. Is restraint too much to ask for the holidays?

—Silvia Killingsworth

Open for dinner Mondays through Saturdays. Entrées $20-$28.

BAR TAB SHRINE WORLD MUSIC VENUE
2271 Adam Clayton Powell, Jr., Blvd.
(212-690-7807)

At this frantic Harlem bar the other evening, amid a roaring throng, a young man in a faded leather jacket offered a seat to another man. Where was this kind person from? "Africa." Where in Africa? "If a man at a bar says he's African, that's enough. If you were a lady, that'd be a different story. But you're not, so get outta here! Have a good night." The venue once housed a community center called the Black United Fund Plaza; the sign now reads "Black United Fun Plaza." Older couples sat on benches along the walls, hung with African objets d'art, and watched svelte men with armfuls of Red Stripe and vodka-colas pressing toward the dance floor, where both drinks and their carriers were clutched at by colorfully outfitted companions. On a raised podium, people strutted their stuff around DJ Birane, who was spinning coupé-décalé from the Ivory Coast; at one point, he upbraided his audience for not paying attention. "I'm gonna stop the music," Birane said. Nobody seemed to hear him. The sound system went silent and was replaced by hubbub. "O.K., O.K., just continue talking. I can press play at any time." Birane looked out at the crowd and instructed them to start swaying with his next song. The music started, and for a moment the room pitched and yawed. Soon, however, the voices returned, louder and more jubilant.

–Nicolas Niarchos

ILLUSTRATION BY LEONARD PENG

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Standard Deviation of Annual Total Returns (1985–2015): Technology (25.45%); Materials (20.73%); Consumer Discretionary (19.27%); Financials (19.26%); Energy (19.08%); Telecom (18.93%); Industrials (17.72%); Health Care (15.93%); Consumer Staples (14.32%); Utilities (14.02%).

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THE NEW YORKER

THE TALK OF THE TOWN

COMMENT
STILL STANDING

They stood eight across on the stage last week at the Milwaukee Theatre.

"Welders make more money than philosophers," said Senator Rubio. "We need more welders and less philosophers."

"The politics of it will be very, very different if a bunch of lawyers or bankers were crossing the Rio Grande," said Senator Cruz. "Or if a bunch of people with journalism degrees were coming over and driving down the wages in the press."

"But taxes too high, wages too high, we're not going to be able to compete against the world," said Mr. Trump.

"Little false little things, sir," Governor Kasich told Mr. Trump, "they don't really work when it comes to the truth."

"We have to win the Presidency," said former Governor Bush. "And the way you win the Presidency is to have practical plans."

"We have to go to zero-based budgeting," said Ms. Fiorina.

"We have to decide what is conservative and what isn't conservative," said Senator Paul.

"And, frankly, we have to stop illegal immigration," said Mr. Trump.

"We have to defend this nation," said Senator Cruz.

"They hate us because women drive in the United States," said Senator Rubio. "Either they win or we win."

"And I think in order to make them look like losers we have to destroy their caliphate," said Dr. Carson. "And you look for the easiest place to do that? It would be in Iraq."

"But as far as the Ukraine is concerned, and you could, Syria—as far as Syria, I like—if Putin wants to go in, and I got to know him very well because we were both on '60 Minutes,' we were stablemates, and we did very well that night," said Mr. Trump.

ILLUSTRATIONS BY TOM BACHTELL

"I don't think we need an agitator-in-chief or a divider-in-chief," said former Governor Bush. "We need a commander-in-chief."

"Zero-based budgeting," said Ms. Fiorina.

"Tax reform, regulatory reform, fully utilize our energy resources, repeal and replace Obamacare, and modernize higher education," said Senator Rubio. "And then truly this new century can be a new American century."

"Our ideas have to add up," said Governor Kasich. "And people have to know we have the confidence to lead America."

"That'll do it," said Neil Cavuto. "Thank you for joining us."

By the close of the fourth Republican debate, the outlines of the battle for the Party's nomination next year were emerging. Rand Paul had his best night and almost seemed to enjoy himself, as one who can already see the end—because conservative libertarians who propose to shrink the defense budget while spelling out huge spending cuts don't win Republican nominations or national elections. Jeb Bush tried to rouse himself, while John Kasich was testily frantic: both men scoffed at Trump's promise to deport eleven million undocumented immigrants, counselled the politics of pragmatism, and offered themselves as professionals who knew how to get things done. Thus they sealed their fates. Overnight, pundits dismissed them as wonky or whiny; primary voters aren't looking for reasonable ideas that will still hold up, in Kasich's words, "under the bright light of the fall." What those voters want is a clean sweep of the Obama years.

The three celebrity outsiders continued to wrap the thinnest evidence of their ability to do the job in the gaudiest self-assurance. Donald Trump's is that of an annoyed gambler bluffing through a string of weak hands; Ben Carson's is the quiet mania of a motivational guru; Carly Fiorina hammers her lines like a pitchwoman trying to cow a potential client with sheer force

of will. Of the three, Fiorina is the only one who's able to answer questions coherently on a national stage. This doesn't mean that she'll survive to the final round—the two men, out of their depth in debates, continue to lead in the polls—but the chances are that only one of them will.

This leaves Rubio and Cruz, who seem likely to be among the last ones standing late next spring: first-term Cuban-American senators, both forty-four years old, career politicians, fluent in the glib art of anti-political speech. Rubio offers a scripted hopefulness, while Cruz, who's reminiscent, physically and rhetorically, of Joe McCarthy, comes off as both more intelligent and more sinister. What distinguishes them from the others in the field is their ability to articulate views that sound substantive enough to command respect but extreme enough to compete with the fantastical dogmas of the outsiders. (Even when there's no substance: philosophers, for example, earn about twice the pay of welders, whose incomes put them in the ranks of the downwardly mobile working class.)

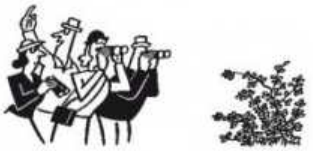
Rubio promises that struggling Americans will fare better under standard trickle-down economic policy in the future than they have in the past. Cruz has developed a potent argument linking corporate lobbies, the wealthy, and the federal government in a nexus of corruption that's laid at the feet of Democrats. "You know, the biggest lie in all of Washington and in all of politics is that Republicans are the party of the rich," he said. "The truth is, the rich do great with big government. They get in bed with big government." The differences between Rubio and Cruz are mostly tactical and temperamental: Rubio, careful and a bit callow, is trying to split the difference between the angry base and the party establishment. Cruz, an ideological zealot who makes enemies easily, is playing to the far right. Rubio is for eliminating taxes on investments; Cruz wants to reduce all taxes to a flat and vanishingly low ten per cent.

But their positions on the central issues are not that far apart. Next fall, the Republican Presidential nominee will be committed to taking away health insurance from eighteen million people, keeping the minimum wage where it is, cutting tax rates on the wealthy to historic lows, reducing the progressivity of the income tax, creating trillions of dollars in new deficits, returning to a militarized foreign policy, and allowing Iran to resume its pursuit of a nuclear weapon by tearing up the deal just signed. If, come next November, that nominee wins the Presidency, and Congress remains in Republican hands, these commitments will start to become realities.

—*George Packer*

DEPT. OF EXPERTS

RATOLOGY



Robert Corrigan holds a doctorate in urban rodentology from Purdue University, and students and colleagues call him the Rat Czar. As a boy growing up in East Flatbush, Corrigan fancied himself a terrestrial Jacques Cousteau; rats were his fish. Now he and his wife split their time between Indiana and New York City.

The other day, Corrigan, who has a company called RMC Consulting, was in town in his role as principal lecturer at the Rodent Control Academy, a three-day course in rat management, taught at the Department of Health, on Worth Street. It was a good time for a brushup: the city's complaint hot line anticipates a record-breaking number of rat-related calls this year; one woman told the A.P. about an Upper West Side colony that resembles the "Burning Man of rats." Every student in Corrigan's course receives a five-pound binder—"the tools to apply a situational analysis to rat management," he says. "The course covers anthropology, biology, and culture."

On the second day of class, Corrigan took a lunch break with Caroline Bragdon, from the Office of Pest Control Services, who told him about a battle she was waging with another city agency, over an area in Brooklyn near the B.Q.E. "They want us to go in and bait," she said. "But they don't want to go in and *clean* the area!"

Corrigan, who is sixty-five and wears rimless glasses, shook his head. "Rats benefit because humans won't talk to each other," he said.

Students sign up months in advance to study with Corrigan. In the seventies, he worked for Fumex Sanitation, managing infestations in Manhattan restaurants. He consulted for the city's Office of Pest Control Services. He taught rodentology at Purdue. In 2008, he was inducted into the Pest Management Professional Hall of Fame. When he's not on the rat-lecture circuit, he takes consulting jobs. "I was in Galway recently," he said. "It's Europe, so those sewers are ancient. Perfect for rats. And then Philadelphia called. They wanted to make sure there weren't any friends running around during the Pope's visit."

After lunch, Corrigan gave a PowerPoint presentation in a dim room on the second floor of the D.O.H. His lecture style is part professor, part Terminator. "I was once called to a hospital because a rat fell from the ceiling onto a patient's bed," he told the class. He showed a slide of the Pulitzer Fountain, in Central Park. "What happens in parks at night?" he asked.

"One big shadow," Nick Branca, an exterminator from Ventura, California, said.

Corrigan dismisses the idea that the subway houses most of the city's rats, calling it a "Hollywoodism." "When it's dark at night, you'll hear them in our parks. By the trees, in the bushes," he said. He explained the next day's field experiment—the last bit before the final exam. "You all will be doing your observations during the day. You might not

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see rats. But what you will see are the environmental conditions and clues that indicate rats are there."

In the morning, the students set out, in groups, to five potential rat hot spots: Columbus Park, Collect Pond Park, the J Train stop at Foley Square, Cortlandt Alley, and the municipal buildings on Lafayette Street. "New York alleys are loaded with details—if you are a keen observer," Corrigan advised.

Branca's group—three exterminators, a sales manager from the company that makes the Ketch-All mousetrap, and a D.O.H. trainee—convened at the catch basin on the corner of White and Lafayette Streets. The curbside drain was damp. Clue No. 1: rats *love* water.

The D.O.H. guy crouched down in front of a nearby building. "You see 80-82?" he said, referring to its address. "Three openings."

The group made notes: shallow burrows under the doorsill, some no larger than a half dollar, stuffed with shreds of paper and food scraps. "We have an active site!" another team member shouted. He said that he would recommend an integrated-pest-management approach that involved filling in the holes with cement.

The group continued north on Cortlandt Alley. Branca paused at a chicken bone on the pavement. Inches from the bone was the shuttered entrance to a sidewalk elevator. "Freight elevators are notorious gathering places," he said. "Food shipments. If you go to the bottom of one, you'll get eaten alive."

One member of the group noticed a trail of sebum from the bone to a door. He knelt to inspect a rusting vent at the base, surrounded by oily marks. A small dark mass darted across the vent. "A whisker!" the Ketch-All guy said. "Did you see that?"

As the rat scholars headed to the next site, they noticed litter along the sidewalks. "This is what we deal with here," one said. "Human rodents."

—Doreen St. Félix

UNDERCARD
TEAM C.C.

Four years ago, Chris Christie was all set to be the savior of the G.O.P., but now that he's running for President a majority of voters in New Jersey want him to drop out of the race. "As a supporter, of course you wish he'd run when he had momentum," Ryan Hager, the secretary of the Seton Hall College Republicans, said last Tuesday, a few minutes before Christie was to appear in the second-tier G.O.P. debate. "This time, there are so many candidates he hardly has ten seconds to get his message out."

Hager, a junior with a sunny disposition and a Christie-esque physique, was in a classroom at Seton Hall, in South Orange, New Jersey—a Catholic university where Christie attended law school—arranging bottles of water, bags of chips, and "I ♥ Capitalism" posters on a table. Jennifer Collins, a senior and the president of the club, stood at a lectern, where a laptop was hooked up to a projection screen. "I can't get it to load," she said.

"Come on, we're missing C.C.'s grand entrance!" Hager said.

The Fox Business Network had invited candidates who were polling above 2.5 per cent to that evening's main-stage debate. Christie missed that cutoff and was relegated to the undercard, an hour-long warmup debate among the four least popular candidates.

"There he is," Hager said, as Christie appeared on the screen. When the Governor bragged about how many tax increases he had vetoed in New Jersey, Hager nodded and said, "A hundred and fifty, baby!" Rick Santorum started talking, and Collins said, "I forgot he was even running, which is probably a bad sign." Then the live stream froze, and a spinning wheel covered Christie's face.

Pizza was delivered, and more College Republicans trickled in. "There are still a lot of Democrats here, but it's more balanced than most schools," Noelle Sorich, a first-year international-relations student, said. Still, "I watched the last debate with my roommate, and whenever Christie came on I couldn't hear, because she was cursing so much." Sorich opened her laptop and checked BallotCraft.com. "It's like fantasy football, but you buy stock in different candidates," she said. "It looks like I bought too much Christie. He's at zero per cent right now."

"Look, maybe this is good for him," Hager said. "He gets to be a big fish in a small pond. These people are not on his level." On the screen, Bobby Jindal attempted a joke about Republican filibusters in the House and flushing a toilet. Hager seemed reassured: "C.C. gets a bunch of airtime, and his clips will be all over the news tomorrow."

"Or maybe this is his campaign's death sentence," Devin Russo, a freshman, said. "Is he electable? He's a little *too* New Jersey, and I'm a guy from New Jersey."

8:11 P.M. Time for closing statements. "Already?" Collins said. Christie vowed to "fight the fights that need fighting," then left the stage. As the other debate began, talk turned to the main-event candidates.

"Rubio might be a good choice," Stephen Sopko, a junior, said. "He's probably the best-looking guy in the race, so that helps."

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Sorich said, of Donald Trump and Ben Carson. "But as an I.R. major it kinda makes me want to cry. Trump said that foreign policy is something he could learn in a day. What am I in school for then?"

The live stream was still choppy, and at one point a Trump monologue became a mashup of disjointed phrases: "All the oil . . . wounded warriors, who I love . . . their arms, their legs."

"I think he makes more sense this way," Russo said.

The screen froze. "Thanks, Obama!" someone shouted.

Caroline Driscoll, a first-year, said, "I sort of like Jeb, even though he's an idiot. He seems the least racist." Who is her favorite candidate? "Bernie," she said. People eyed her suspiciously. On the screen, Rand Paul declared himself "the only fiscal conservative on the stage," and Driscoll groaned.

Neil McCarthy, a freshman, told Driscoll, "I think we can agree that this is gonna be a depressing election no matter what."

"Unless Bernie wins and we end up in a Socialist utopia," Driscoll said. "Sweden or bust!" McCarthy rolled his eyes.

It was after 10 P.M. Sorich checked BallotCraft again. "I bought way too much Fiorina," she said. "I should have dumped her twenty minutes ago." Christie had dropped off the site's rankings altogether.

A security guard entered. "Building's closed, guys," he said.

The room cleared, and Hager and Collins stacked empty pizza boxes. "They usually don't enforce the time so strictly," Hager said. "Maybe they know we're Republicans."

—*Andrew Marantz*

THE BOARDS
REPORT CARD

Most of the dozen kids sprawled around a rehearsal studio on Forty-second Street the other day had on T-shirts and sneakers. It was a rehearsal for "School of Rock," a Broadway musical based on the Jack Black movie, about a burnout who poses as a substitute teacher and inducts his students into the joys of AC/DC. Even Andrew Lloyd Webber, who composed the score, paced the back of the room in Nikes and jeans. But Julian Fellowes, the show's book writer, best known as the creator of "Downton Abbey," was dressed for teatime: double-breasted blazer, red suspenders, maroon tie. Hunched over a laptop taking notes, he barely looked up as a group of child actors rehearsed a scene in which they bang out a passage from "The Magic Flute."

The actress playing their beleaguered music teacher grabbed a cymbal from a boy in a yellow hoodie. "Now what?" she asked, off-script. "Chuck it into the wings," someone said.

"Throw it into the dress circle," Fellowes suggested. "Decapitate some luckless audience member."

Rehearsal ended, the kids gathered their backpacks, and Fellowes headed out into Times Square. Asked if he had spotted any of the neighborhood's new icons, the *desnudas*, or any Elmos, he replied, "What are Elmos?"—an inadvertent echo of "Downton"'s Dowager Countess's inquiry "What is a week*end*?" Lunch was at the Hard Rock Café, where Fellowes paused in front of a display case of C.B.G.B. guitars. "Everclear, Toadies—what do these things *mean*?" he said. He perked up at the sight of Jimi Hendrix's '67 Gibson SG. "Jimi Hendrix—I can go there. I remember his death. That was one of the key rock deaths of my youth. It's always shocking when people of your own generation die when you're young, because you're never going to die."

He sat under a Ramones poster and ordered the Jumbo Combo: chicken tenders, onion rings, and other deep-fried items. "It's enough food for about forty-five people," he said when it arrived.

How did he get from Highclere Castle to "School of Rock"? "Andrew rang me up and asked," he said. "Also, it seemed to me a nice change from ladies' maids and footmen." American fourth graders may not speak like the Earl of Grantham, but Fellowes, who lived in Los Angeles in the eighties, said that he feels comfortable in both vernaculars. Just in case, a consultant was on hand during rehearsals, to make sure that the colloquialisms were right. At one point, he advised Fellowes to change the line "Can I help?" to "Is there a problem?"

Fellowes left the family home in East Sussex for boarding school when he was nine. "The age these kids are, I was running around in the country, going swimming, and riding ponies," he recalled. His music education was mostly piano lessons, which he begged to quit. "Finally, my mother said to me, 'O.K., I'll let you give up piano, but on one condition: that you never, ever say that you regret it.' And, of course, within a year I regretted it bitterly." He loved "The Rocky Horror Picture Show" and Elvis Presley ("my giant"). "We would go off to the local fleapit to see the Elvis films, and there was something quite moving in this new culture that was free of all the old rules," he went on, bringing to mind the jazz-and-roadster revolution on "Downton."

He bit into an onion ring and continued, "By the time the Beatles got going, I was about fifteen." He saw them at the Hammersmith Odeon. He grew his hair to his shoulders ("which I couldn't lay claim to now") and worshipped Carole King. "When I was in love with someone and it didn't work out, I would listen to 'It Might as Well Rain Until September.'" One time, at a dance, he recalled, "I was coming out of the ballroom and this old colonel said to me, 'Do your tie up, sir! Good God, there are ladies present!' And I suddenly realized the song that was playing was 'Je T'Aime,' by Jane Birkin. And I thought, This is the meeting of two worlds. Here he's talking as if we're still in 1850, and an almost pornographic song is being played on the loudspeaker."

Fellowes gave up on the Jumbo Combo and went to look at memorabilia. He was puzzling over a Joan Jett display when a man with a goatee and a skull ring approached. It was the Hard Rock's marketing director, and he invited Fellowes to step out onto the top of the marquee. "Ozzy Osbourne's played up here," the man said, as they stood on the platform. Fellowes peered down Seventh Avenue, which looked, from that height, like a ravine. "It's a rather fantastic townscape," he said, declining to ask, "What is an Ozzy Osbourne?"

—*Michael Schulman*

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THE FINANCIAL PAGE

SELLING THE GOLDEN-EGG GOOSE

Few things currently spook investors more than the future of media companies. Just a couple of weeks ago, when Time Warner reported disappointing earnings and a gloomy outlook for 2016, its stock fell more than six per cent, and it's now down nearly twenty per cent for the year. The company blamed exchange rates and new investments, but investors saw only the deeper problems for the industry, including, most obviously, the rise of "cord cutting"—people abandoning traditional cable packages for streaming services. Richard Greenfield, a media and tech analyst at BTIG Research, told me, "The way people watch TV really is changing dramatically. And no traditional media company is doing a good job of dealing with it."

But one part of Time Warner is thriving in the new media landscape: HBO. It has more than a hundred and twenty million subscribers globally, and earned close to two billion dollars in profits last year. Its stand-alone streaming service, HBO Now, has attracted a million customers since it launched, last spring. And HBO has invested in a host of other new ventures, too—production deals with Jon Stewart, Issa Rae, and Bill Simmons, a news division, and so on. In a clear sign that it wants to be a bigger player in the streaming market, where children's content is crucial, it has acquired the rights to stream "Sesame Street." HBO has arguably never been more valuable. And that, oddly, makes this the perfect moment for Time Warner to let it go—to spin it off as a separate company in an I.P.O.

If HBO is doing so well, why get rid of it? One answer is that HBO would be far more valuable in the eyes of investors as a separate company. Big, diversified companies suffer from the so-called "conglomerate discount." The whole is worth less than the sum of its parts, because investors have trouble valuing corporate divisions and get worried about how the parts of a company interact. As Emilie Feldman, an assistant professor of management at Wharton and an expert on divestitures, puts it, "Spinning off a company allows the market to see it more clearly and value it more accurately." This is especially true when, as at Time Warner, different parts of a company have radically different business models and growth trajectories. HBO looks set to thrive in a cord-cutting world; Time Warner's cable networks are more likely to struggle. That brings down Time Warner's over-all price-to-earnings ratio (currently around sixteen). If HBO were trading on its own, that ratio would likely be much higher, which means that investors would be putting a higher value on every dollar HBO made.

Spinning off HBO would also have benefits for the day-to-day running of the company. It would be easier to tie people's pay directly to the company's performance: instead of Time Warner stock options (whose value depends on a lot of things other than HBO), employees would get HBO options. A study by Feldman found that spinoffs aligned managerial compensation and stock-market performance, and other studies have found that spinoffs also typically improve the way resources are allocated at the new company.

The idea of an HBO spinoff has been floated before, but Time Warner's C.E.O., Jeff Bewkes, has always resisted. That's no surprise. Selling off the crown jewels is never easy for an executive to contemplate. In a business as volatile as the media, giving up a cushion of steady earnings growth takes courage. And, even if you keep shares in the company you've spun off, it's hard not to fear you'll miss out if the I.P.O. turns out to be a real blockbuster. More fundamental, Time Warner without HBO would be a less interesting, less buzzy company. Running the company that owns Warner Bros. and the Turner networks wouldn't be quite the same as running the company that makes "Game of Thrones."

Still, the cost of failing to take advantage of HBO's buoyancy could be high, since on top of everything else a spinoff would be a good hedge against risk. Not that long ago, there were calls for Disney to spin off ESPN, which at the height of its power was valued at around fifty billion dollars. Disney didn't. And, while ESPN is still a dominant player in cable and reported solid numbers last week, it's clearly suffering from the effects of cord cutting and the rising cost of sports rights. In August, anxieties about its slowing growth provoked a meltdown in media stocks. ESPN is going to be tremendously profitable for years to come, but it's hard to argue that Disney wouldn't have been better off banking fifty billion dollars in 2014.

Spinoffs don't always make sense. If there were real synergies between HBO and the rest of Time Warner, the case for keeping it in-house would be stronger. But those synergies are hard to find: it's very telling that HBO's news venture is a partnership with Vice rather than with the Time Warner-owned CNN. If HBO were an independent company today, would anyone think that being bought by Time Warner would increase its value? To ask the question is to answer it. This is an era of radical uncertainty in the media business. But Time Warner can be very certain about one thing: in HBO, it has an asset that's worth close to thirty billion dollars in a spinoff. Time to cut that cord.

—*James Surowiecki*

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ANNALS OF MEDICINE

HELPING HAND

Robots, video games, and a radical new approach to treating stroke patients.

BY KAREN RUSSELL

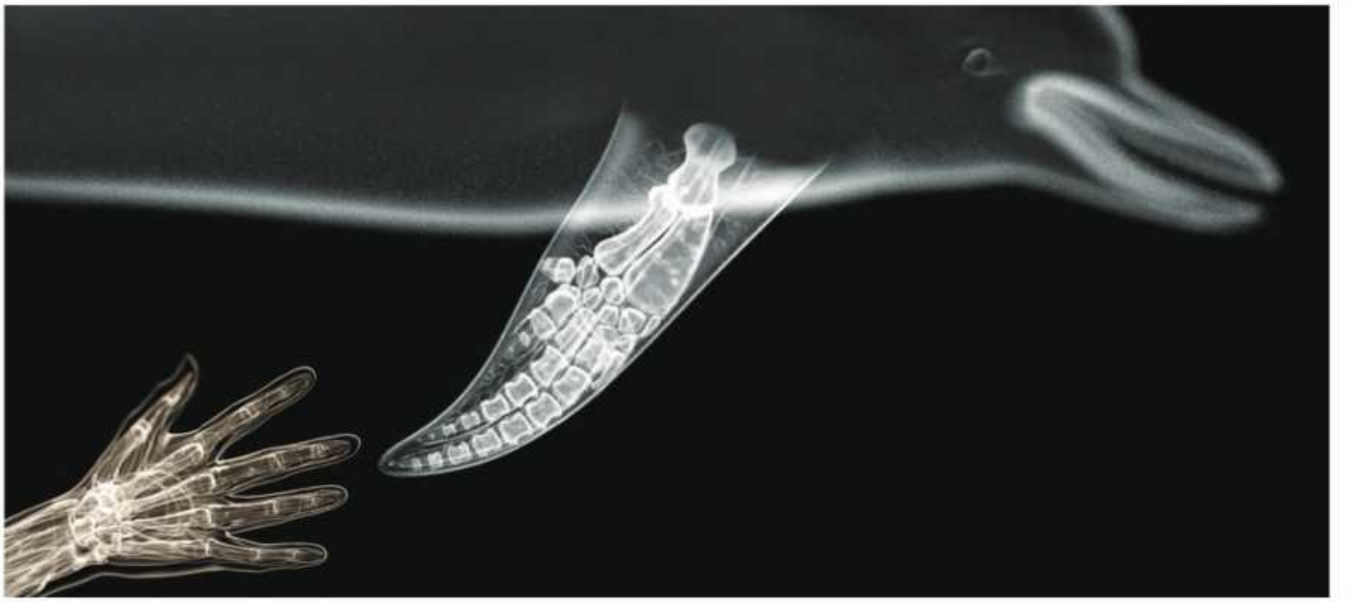
In late October, when the Apple TV was relaunched, Bandit's Shark Showdown was among the first apps designed for the platform. The game stars a young dolphin with anime-huge eyes, who battles hammerhead sharks with bolts of ruby light. There is a thrilling realism to the undulance of the sea: each movement a player makes in its midnight-blue canyons unleashes a web of fluming consequences. Bandit's tail is whiplash-fast, and the sharks' shadows glide smoothly over rocks. Every shark, fish, and dolphin is rigged with an invisible skeleton, their cartoonish looks belied by the programming that drives them—coding deeply informed by the neurobiology of action. The game's design seems suspiciously sophisticated when compared with that of apps like Candy Crush Soda Saga and Dude Perfect 2.

Bandit's Shark Showdown's creators, Omar Ahmad, Kat McNally, and Promit Roy, work for the Johns Hopkins School of Medicine, and made the game in conjunction with a neuroscientist and neurologist, John Krakauer, who is trying to radically change the way we approach stroke rehabilitation. Ahmad told me that their group has two ambitions: to create a successful commercial game and to build "artistic technologies to help heal John's patients." A sister version of the game is currently being played by stroke patients with impaired arms. Using a robotic sling, patients learn to sync the movements of their arms to the leaping, diving dolphin; that motoric empathy, Krakauer hopes, will keep patients engaged in the immersive world of the game for hours, contracting their real muscles to move the virtual dolphin.

Many scientists co-opt existing technologies, like the Nintendo Wii or the Microsoft Kinect, for research purposes. But the dolphin simulation was built in-house at Johns Hopkins, and has lived simultaneously in the commercial and the medical worlds since its inception. "We depend on user feedback to improve the game for John's stroke patients," Ahmad said. "This can't work without an iterative loop between the market and the hospital."

In December, 2010, Krakauer arrived at Johns Hopkins. His space, a few doors from the Moore Clinic, an early leader in the treatment of AIDS, had been set up in the traditional way—a wet lab, with sinks and ventilation hoods. The research done in neurology departments is, typically, benchwork: "test tubes, cells, and mice," as one scientist described it. But Krakauer, who studies the brain mechanisms that control our arm movements, uses human subjects. "You can learn a lot about the brain without imaging it, lesioning it, or recording it," Krakauer told me. His simple, non-invasive experiments are designed to produce new insights into how the brain learns to control the body. "We think of *behavior* as being the fundamental unit of study, not the brain's circuitry. You need to study the former very carefully so that you can even begin to interpret the latter."

Krakauer wanted to expand the scope of the lab, arguing that the study of the brain should be done in collaboration with people rarely found on a medical campus: "Pixar-grade" designers, engineers, computer programmers, and artists. Shortly after Krakauer arrived, he founded the Brain, Learning, Animation, Movement lab, or BLAM! That provocative acronym is true to



The rehabilitative game aims to create a visceral link between the patient's body and Bandit, a simulated dolphin.

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the spirit of the lab, whose goal is to break down boundaries between the "ordinarily siloed worlds of art, science, and industry," Krakauer told me. He believes in "propinquity," the ricochet of bright minds in a constrained space. He wanted to create a kind of "neuro Bell Labs," where different kinds of experts would unite around a shared interest in movement. Bell Labs is arguably the most successful research laboratory of all time; it has produced eight Nobel Prizes, and inventions ranging from radio astronomy to Unix and the laser. Like Bell, BLAM! would pioneer both biomedical technologies and commercial products. By developing a "self-philanthropizing ecosystem," Krakauer believed, his lab could gain some degree of autonomy from traditionally conservative funding structures, like the National Institutes of Health.

The first problem that BLAM! has addressed as a team is stroke rehabilitation. Eight hundred thousand people in the U.S. have strokes each year; it is the No. 1 cause of long-term disability. Most cases result from clots that stop blood from flowing to part of the brain, causing tissue to die. "Picture someone standing on a hose, and the patch of grass it watered dying almost immediately," Steve Zeiler, a neurologist and a colleague of Krakauer's, told me. Survivors generally suffer from hemiparesis, weakness on one side of the body. We are getting better at keeping people alive, but this means that millions of Americans are now living for years in what's called "the chronic state" of stroke: their recovery has plateaued, their insurance has often stopped covering therapy, and they are left with a moderate to severe disability.

In 2010, Krakauer received a grant from the James S. McDonnell Foundation to conduct a series of studies exploring how patients recover in the first year after a stroke. He was already well established in the worlds of motor-control and stroke research. He had discovered that a patient's recovery was closely linked to the degree of initial impairment, a "proportional recovery rule" that had a frightening implication: if you could use early measures of impairment to make accurate predictions about a patient's recovery three months later, what did that say about conventional physical therapy? "It doesn't reverse the impairment," Krakauer said.

Nick Ward, a British stroke and neurorehabilitation specialist who also works on paretic arms, told me that the current model of rehabilitative therapy for the arm is "nihilistic." A patient lucky enough to have good insurance typically receives an hour each per day of physical, occupational, and speech therapy in the weeks following a stroke. "The movement training we are delivering is occurring at such low doses that it has no discernible impact on impairment," Krakauer told me. "The message to patients has been: 'Listen, your arm is really bad, your arm isn't going to get better, we're not going to focus on your arm,' " Ward said. "It's become accepted wisdom that the arm doesn't do well. So why bother?"

Krakauer and his team are now engaged in a clinical trial that will test a new way of delivering rehabilitation, using robotics and the video game made by Ahmad, Roy, and McNally, who make up an "arts and engineering" group within the Department of Neurology. Krakauer hopes to significantly reduce patients' impairment, and to demonstrate that the collaborative model of BLAM! is "the way to go" for the future study and treatment of brain disease.

Reza Shadmehr, a Johns Hopkins colleague and a leader in the field of human motor-control research, told me, "He's trying to apply things that we have developed in basic science to actually help patients. And I know that's what you're supposed to do, but, by God, there are very few people who really do it."

"You bank on your reputation, in the more conventional sense, to be allowed to take these risks," Krakauer said. "I'm cashing in my chits to do something wild."

In 1924, Charles Sherrington, one of the founders of modern neuroscience, said, "To move things is all that mankind can do; for such the sole executant is muscle, whether in whispering a syllable or in felling a forest." For Sherrington, a human being was a human doing.

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Yet the body often seems to go about its business without us. As a result, we may be tempted to underrate the "intelligence" of the motor system. There is a deep-seated tendency in our culture, Krakauer says, to dichotomize brains and brawn, cognition and movement. But he points out that even a movement as simple as reaching for a coffee cup requires an incredibly sophisticated set of computations. "Movement is the result of decisions, and the decisions you make are reflected in movements," Krakauer told me.

Motor skills, like Stephen Curry's jump shot, require the acquisition and manipulation of knowledge, just like those activities we deem to be headier pursuits, such as chess and astrophysics. "Working with one's hands *is* working with one's mind," Krakauer said, but the distinction between skill and knowledge is an ancient bias that goes back to the Greeks, for whom *techne*, skill, was distinct from *episteme*, knowledge or science.

One afternoon, a team from *National Geographic* came to the lab to interview Krakauer for a special series on innovators. I found myself eavesdropping on the reporters for whom he was simulating being Dr. Krakauer. At one point, the cameraman asked him, rephrasing Edison's inspiration-perspiration binary, "Would you say that creative work is ten per cent mental and ninety per cent physical?"

"Actually," Krakauer said, "the physical-mental distinction is something we're trying to break down here."

Krakauer is forty-nine, with soft, prairie-dog hair and keen eyes framed by boxy blue glasses. A serious tennis player in high school, he still plays squash competitively. He has one far-sighted eye and one nearsighted eye, a detail that I'll resist making too much of here. Even close friends say that Krakauer's high standards can sometimes be maddening. "You are correct," Steve Zeiler texted him late one night. "And exhausting."

Although Krakauer went to Cambridge and speaks with a crisp British accent, he spent most of his early life in a small fishing village in southern Portugal. His father, a Jew, fled Germany in 1938, before joining the U.S. Air Force; his mother, who is British,

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was a teacher. After they separated, she moved with her children to Albufeira. When Krakauer was seven years old, his to-do list had one item: Bring pencil to Portugal. His favorite toy was a tiny gray hedgehog, which he believed was omniscient and controlled the world.

Edward O. Wilson has said, "It's not a good idea to ask a scientist what he has read as literature." But the library in Krakauer's minimalist town house is extensive. His favorite book is "Gemini," by Michel Tournier, a grotesque and hilarious tale of exiled twins who travel the globe in pursuit of their lost and future selves.

"John and I have always been dissatisfied with the options that presented themselves to us," his younger brother, David, the president of the Santa Fe Institute, told me. "It has to be a this or a that, mutually exclusive choices—you're a scientist or you're an artist or you're a historian." Some of John's wilder affiliations make him sound a little like a nerdier version of the Most Interesting Man in the World, from the Dos Equis ads. Once, I called him to discover that he was consulting with NASA on the projected Mars mission; in summers, he holds a post at a Portuguese biomedical-research facility called the Champalimaud Centre for the Unknown.

Krakauer got his medical degree at Columbia. At a lecture in 1996, the last year of his neurology residency, he asked a question about the PET scans of stroke patients that attracted the attention of Claude Ghez, a prominent figure in motor-control research. "Before I met Claude, I thought neuroscience was test tubes and cells," Krakauer said. "Claude taught me that simple behavioral experiments could reveal profound truths about how the brain is organized." Ghez asked Krakauer to join his lab. As Ghez told me, "John had a gift for identifying the question worth studying."

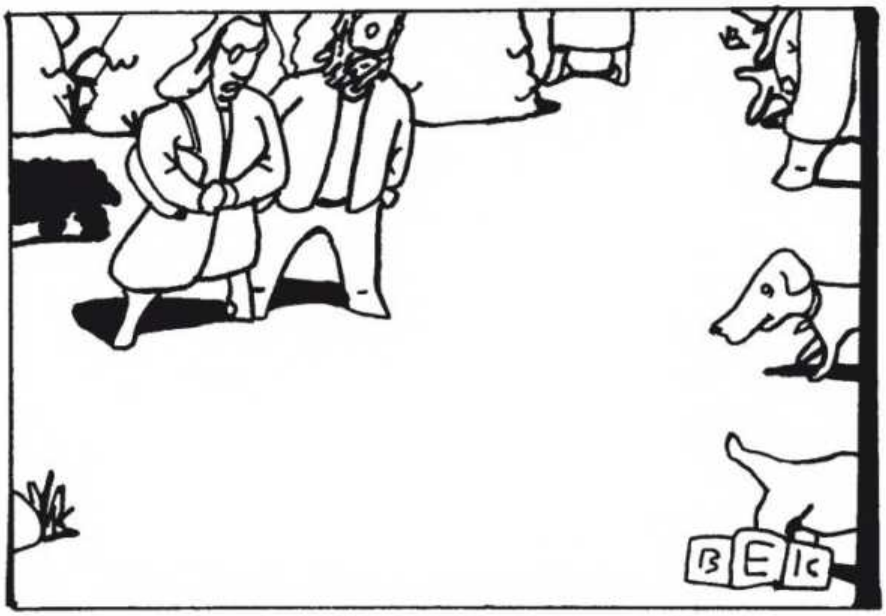
We've all occasionally been frustrated by the gulf between what the imagination can choreograph and what the body can accomplish. But for stroke survivors this chasm can be permanent. Four years after a stroke, eighty per cent of patients still report impairment so severe that they have difficulty grooming, bathing, cooking, and driving.

Fifty years ago, nobody thought that the regrowth of neuronal connections after acute brain injury was possible. Now there is a widespread consensus that these connections are in constant flux.

Stroke-induced injury to the brain may have a silver lining, neurologically speaking. The tissue death that results from stroke appears to trigger a self-repair program in the brain. For between one and three months, the brain enters a growth phase of molecular, physiological, and structural change that in some ways resembles the brain environment of infancy and early childhood. The brain becomes, as one researcher told me, "exquisitely sensitive to our behavior." What follows is a sort of "G.P.S. recalculating" period. Networks of brain cells begin to reroute around the stroke lesion, and neurons adjacent to the lesion start to take over some of the dead cells' functions. S. Thomas Carmichael, a neuroscientist and neurologist at U.C.L.A., compared the period of plasticity to the explosion of seedlings after a forest fire: it's a fecund time, but those shoots are tender, vulnerable, easily damaged. He cautioned that it's essential to harness that growth. "You wouldn't turn this growth phase on and plunk somebody in front of the television to binge-watch 'Modern Family,'" he joked.

But, for many patients, that is essentially what happens. A 2004 University of Melbourne study, titled "Inactive and Alone," showed that, in the early weeks of acute-stroke care, most patients spend fifty-three per cent of their time in their hospital beds. According to a later study, stroke patients who receive physical therapy for their paretic arm make, on average, thirty-two reaches per session. When neuroscientists perform studies on post-stroke mice, rats, and monkeys, the animals are required to make as many as four hundred to five hundred reaches per session. "Around thirty reaches per rehab session is having no impact on impairment," Krakauer said. "We are providing physical therapy at homeopathic doses."

Another problem, Krakauer said, is that patients are being prematurely made to learn compensatory strategies. They lean heavily on their good side to get out of bed, to get to the toilet, to wash and feed themselves. As one neurologist described it, learning such strategies can mean "the difference between having someone wipe your butt and wiping your own butt." But Krakauer worries that the accommodations that make a patient more independent in the short term actually "stamp in suboptimal strategies." True



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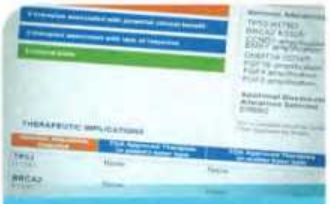

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recovery, for Krakauer, would mean that a patient was able to move her paretic arm as she did before the stroke.

"We knew that spontaneous biological recovery happens early," Krakauer told me. "What could one do to maximally take advantage of this unique period?" Everyone seems to agree that something special is happening in the brain during the first three months following a stroke; this is when most patients make their greatest gains. Nick Ward, the stroke specialist, told me, "John is certainly responsible for bringing this new agenda into focus, this question: What is it about this early phase which is really important—is this where to target our therapies?"

However, not all the doctors and therapists I spoke with think that beginning intensive movement therapy in the early weeks following a stroke is advisable, or even plausible. Carmichael suggested that it would be difficult to get stroke patients to stick to such a demanding regimen. He said, "You take a seventy-five-year-old who wasn't very active, and you're asking him to be more active than he was before the stroke."

Krakauer agrees that what he's proposing will require immense effort on the part of patients, as well as a restructuring of the entire delivery system for stroke rehabilitation. But a 2009 study that translated animal doses of therapy into human proportions provides hope that people can complete such a regimen. And Krakauer has a substantial ally in his quest to rehabilitate the arm: an "antigravity" robot.

The Hocoma ArmeoPower is a robotic arm that brings to mind the love child of a large dental chair and the Nintendo Power Glove. The patient's arm is strapped into a motorized robotic sling, which can assist with movements or, in the first few days after a stroke, when patients might not be able to move their arms independently, even take over.

Rehabilitative video games can be used in conjunction with the Hocoma; some come preloaded. But most of them are focussed on functional, real-world tasks. The objective of one game developed for use with the robot is "grating carrots." "Abysmal games," Adrian Haith, a neuroscientist and BLAM!'s co-director, said, laughing. "The cleaning-the-stovetop game, the picking-the-apples-in-the-supermarket game."

For Krakauer, the game had to be fun, and it had to be beautiful. Motivation and reward, he said, play a huge role in how we learn movement. "It's not sufficient to say, 'Take this, it's a medicine,' " Krakauer said. "Physical therapy is boring and difficult and uncomfortable, and I planned to ask my

patients to spend two hours a day working hard in this virtual world." And why should we expect a poorly designed game to be an effective therapy? "It's like saying to somebody, 'When you are sick, you have to settle for black-and-white TV.' "

Krakauer needed a paradox, a "non-task-based task." He wanted to encourage "childlike exploration" with the arm, in the workspace of daily life—the space around the torso, where we make most of our arm movements. Something analogous to what babies do when they're learning how to speak. If conventional therapy was like repeating a single conjugated sentence, Krakauer wanted his patients to "babble," trying out countless varieties of movement.

Since 2008, Omar Ahmad had been visiting the dolphins at the National Aquarium, in Baltimore. He often brought his son. The dolphins swam upside down, shovelling bubbles at Omar's face with the muscular petals of their flukes. "I knew I was going to make a dolphin simulation," Ahmad said. "I was fascinated by their locomotion." Ahmad, who grew up in Eugene, Oregon, did his Ph.D. at Johns Hopkins. Part of his graduate work involved making mathematical models to predict hip fractures. "For hours, I watched people walk," he said. "I got really good at studying human locomotion." A former instructor of his introduced him to Krakauer, who was looking for a game designer. Although Krakauer wasn't thinking dolphins quite yet, he had a vision of "something tumbling through indigo."

Krakauer recalls taking a trip, in 2011, with Ahmad and Promit Roy, whom Ahmad met when they were both students at Johns Hopkins. "We went to San Francisco together, to the first Neuroscience and Gaming Meeting—that was our honeymoon," Krakauer said. "And we just sat there in contempt of it. We thought the games were lame."

Krakauer's requirements for his stroke game meshed with Ahmad and Roy's goals for a commercial game, and with their philosophy of design. Since 2008, Ahmad had been working on games that included animal locomotion; one of them, Aves, had been featured in the Apple store and earned him a fan letter from Steve Jobs. Now he wanted to make a "physics-based" game, with highly realistic movement. Roy recalls, "We thought that the way things moved in games was all wrong; we thought we could make it better." They joined BLAM!, and a few months later brought on board Kat McNally, a twenty-five-year-old graphic artist and a graduate of the Maryland Institute College of Art, whose vibrant drawings and comics they admired. They form a subgroup called the Kata Project. (In Japanese, *kata* means "form.") Though they're full-time employees of the Johns Hopkins medical school, the three also own an indie gaming company called Max and Haley.

One day, a staffer at the National Aquarium noticed that Ahmad was glued to the dolphin tanks; she suggested that he read Diana Reiss's book "The Dolphin in the Mirror." Reiss is a leading dolphin researcher at Hunter College and an advocate for the protection of dolphins. A friend of Krakauer's, she introduced the team to her close friend, Sue Hunter, the head of animal programs at the National Aquarium.

Together, the group worked on the dolphin—"No, no," Hunter would tell McNally, "the eyes lack a certain spark." Or, "Yes, that dive posture looks right." Last September, Hunter died of a brain tumor. Before her final surgery,

the team took the finished game to show her. "Sue really loves it," Ahmad said, when I visited the National Aquarium with him and McNally. Two months later, they were still mixing up verb tenses when they spoke about her.

The Pit is a spandrel in the center of the aquarium's dolphin tanks, to which Kata has special access. McNally and I climbed down a ladder into a chamber the width of a closet, fronted by three windows that looked into the tanks. McNally told me that she'd spent thousands of hours in the Pit, sketching and observing. Far above us, light streamed through a domed roof, beyond which lay the Baltimore harbor and skyline. Fluctuating yellow beams of light, known as caustics, reached thinly toward our faces. Roy told me later that he's been updating the code for the game's ocean to include them. McNally stood beside me, breathing evenly. "Look," she said, grabbing my arm. A dolphin had levitated, her gray face smiling like that of a beatific astronaut. In "The Dolphin in the Mirror," Reiss describes these playful cetaceans as "minds in the water." Playing requires a certain kind of intelligence, she points out; physical play is a way of learning what you can do in your environment.

Watching the animal's fusiform body, it was hard to imagine a creature better suited to its environment. To climb out of the Pit, Kat and I pulled ourselves up using several cold red rails, reaching with our arms and legs, cinderblocking our muscles against gravity. Below us, the dolphins flew around the teal space like large, strange birds.

Next, we visited an open saltwater pool. Ahmad told me that the team was adding some new marine characters to the game. I was peering down at their inspiration. Bright creatures slid thickly over one another. A ray looked like a steamrolled moon. Bluefish schooled around with yellow pouts, as if regretting their choice of lipstick.

Ahmad pointed to a blacktip reef shark that was making a labored U-turn. "You know how a stupid kid turns his head to answer but a smart kid will roll his eyes over to you without turning his head from the TV screen?" he asked. He pointed out that the shark's flat eyes were aligned with its trajectory; a dolphin, however, has the ability to "decouple" attention from motion. In the video game, Bandit's eye movements sometimes direct a player to an imminent threat, or roll downward to suggest where the dolphin wishes to move.

Later that afternoon, at the BLAM! lab, McNally had a picture of a calligraphic slash tacked up to her cubicle: it was "the first Bandit," an impressionistic version of the cartoon dolphin now floating on Roy's computer screen.

"Take the skin off for her," Ahmad said.

They turned off the lights and disrobed Bandit. I was now staring at a skeleton, rotating gently in the ocean. What I saw was naked blocks of undulating color. And yet my brain interpreted the movement as a rippling spine. Albert Michotte, a Belgian experimental psychologist, demonstrated that if lines of light move in particular ways onscreen we have an innate tendency to view this activity as "living" movement. Just watching that shiver in the water, I knew it was alive.

"The way we did the animation is that every creature is a simulated biological entity," Ahmad said. The team wanted to start with the warmth of hand-drawn animation and then apply the rigor of simulation. Ahmad said that he sees his work as part of a "forgotten lineage," the old "wobble and stretch" of Disney cartoons. He calls this method the "road not taken" of modern gaming animation: hand-drawn characters, moving in springy, exaggerated ways. Mickey's and Pluto's shaky, hyperbolic reactions to gravity actually serve to enhance the cartoons' realism, Ahmad said, by making invisible forces present to the viewer. "You're watching physics in action," he told me. "Muscles, friction."

Today's game animation, Ahmad said, feels "more like a stitched-together

ASH

Strange house we must keep and fill.

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House of trick and suck and shrug.

Give-it-to-me house. *I-need-you-baby* house.

House whose rooms are pooled with blood.

House with hands. House of guilt. House

That other houses built. House of lies

And pride and bone. House afraid to be alone.

House like an engine that churns and stalls.

House with skin and hair for walls.

House the seasons singe and douse.

House that believes it is not a house.

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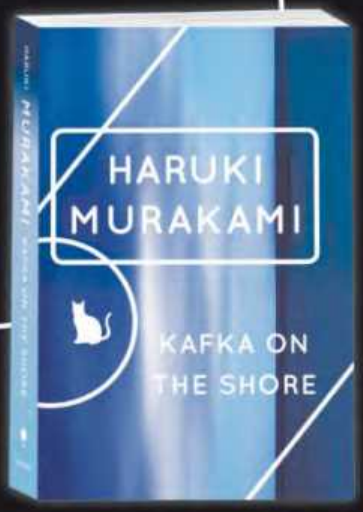

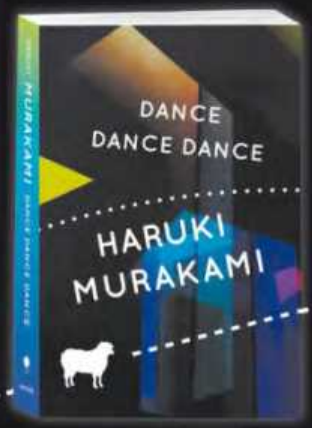

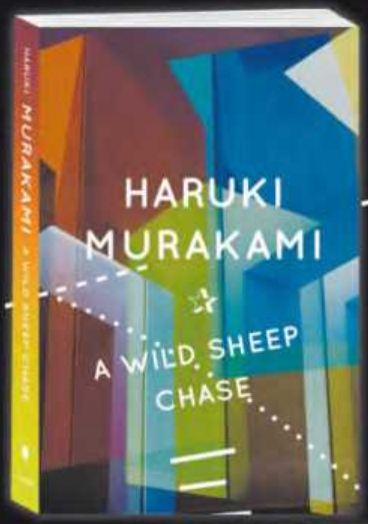

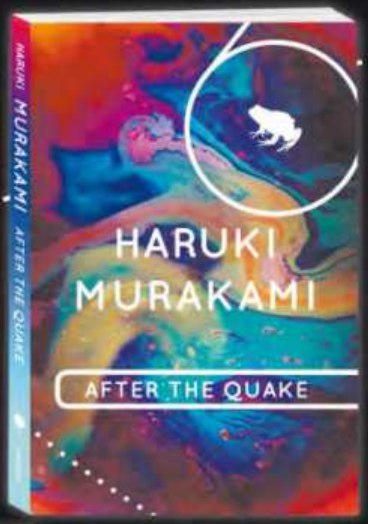

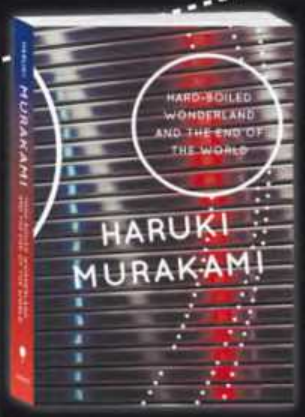

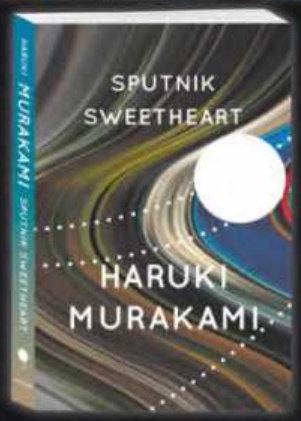

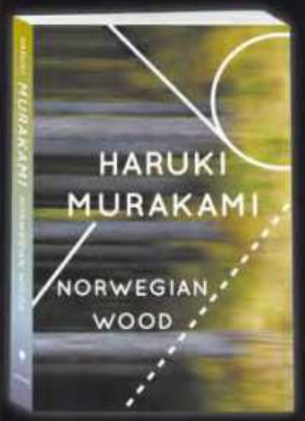

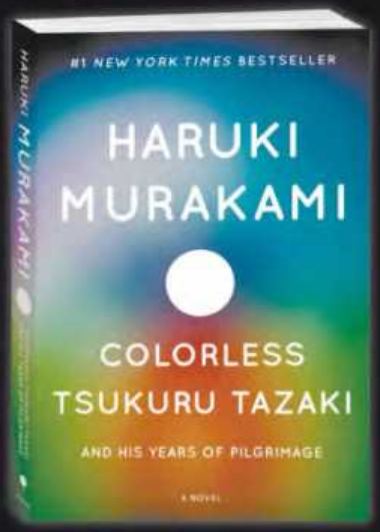

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VINTAGE

flip book. That's because it doesn't simulate the physics. You hit a button on the controller and it unspools a prerecorded program; all the action is determined in advance and programmed into the game." Roy showed me the game engine, which he had coded from scratch: files scrolled by my eyes, with names like "tail stun" and "awesome bubbles" and "even more awesome bubbles."

Kata's goal was to make an animal simulation realistic enough to activate what Ahmad calls the "motoric connection," the visceral link between the patient's moving body and the simulated dolphin; when Bandit leaps, you feel a tingling in your spine. "I created a field," Ahmad said, with a fierce shrug, as if challenging me to disbelieve him. "The field of interactive animation." ("Omar's style is 'burn the world down,' " Roy told me once, in his characteristic deadpan; if Ahmad's style is a fiery idealism, Roy is the Kata straight man.)

The commercial game has been nominated for several honors for technical innovations by Pocket Gamer and AiGameDev.com. Stefan Schumacher, a thirty-two-year-old Pixar animator who is working on the sequel to "Finding Nemo," visited the BLAM! lab in the fall of 2014 and came away impressed by what Kata had accomplished. "There are only three of them," he marvelled. Top productions, like Grand Theft Auto and the Sims series, employ teams of hundreds. "Simulation is done entirely by a computer," Schumacher said. "It's very good at replicating physical behavior. What simulation is not very good at is making design choices. I think these guys are very smart about bridging these worlds."

For months, the team struggled with the problem of how to give a player control over the simulation while still imbuing the dolphin with the illusion of independent life. At first, they considered splitting the player and the dolphin into trainer and animal. But that didn't sit right; they didn't want there to be a disconnect that made it feel "like Bandit was a toy you were tugging around on a leash," McNally said.

One day, the team watched video footage of Omar waving his arm, with slow deliberation, at a dolphin in the aquarium; behind the glass, the dolphin mirrored him. The group was witnessing a moment of merger between two independent actors. The player, the team decided, would have to "become" the dolphin, adjusting his own movements to match the animal's.

"Dolphins are like scientists," Diana Reiss says. "They play to test the contingencies of their world." The game the Kata team designed aims to productively disorient patients by plunging them into an ocean and asking them to learn how to swim the dolphin around. "There's no right and wrong when you're playing as a dolphin," Krakauer said. "You're learning the ABCs again—the building blocks of action. You're not thinking about your arm's limitations. You're learning to control a dolphin. In the process, you're going to experiment with many movements you'd never try in conventional therapy."

Last November, I went back to Johns Hopkins to witness preparations for the trial. Seventy-two patients will be recruited within five weeks of their strokes; patients will also be tested at Columbia University and at a clinic in Zurich. Twice a day for three weeks, they'll play the rehabilitative version of the dolphin game with the Hocoma robot for an hour; a control group will receive conventional occupational therapy.

Recruitment hadn't yet begun, but several chronic patients had volunteered to help set the trial protocols; one afternoon, I slid into a hushed crowd of spectators in the main room of the BLAM! lab, on the second floor of Johns Hopkins's Carnegie building. Roy was adjusting the Hocoma chair; on a large L.C.D. screen, Bandit, who is modelled on the Atlantic bottlenose, grinned out at us, his tongue humped and glowing like a radioactive scoop of strawberry ice cream. G., the volunteer, was a fifty-three-year-old man wearing a Puma baseball cap and a relaxed expression; he laughed out loud when he saw the dolphin. "Aw, man, I'm in awe you guys put this together," he said. "Before I had my stroke, I'd play Wii for hours and hours."

Krakauer was in clinician mode, conferring with the physical therapist and making adjustments to G.'s arm in the sling. His tone was calm and solicitous, but some of his questions were unusual: "Is that comfortable? Are you ready to get those mackerel?" G. oriented himself, moving his impaired arm around in the robotic sling.

The game's settings are not easy. Strapped into the Hocoma chair, I had played it earlier in the week, and found it less like a video game than like the first ten minutes in an unfamiliar rental car. Dedicated physical therapists, Krakauer said, will tailor the game to each patient's needs and abilities. For a while, G. simply explored the ocean, lifting and lowering his arm in the sling. Gradually, he learned how to make the dolphin jump, dive, and roll—the arm itself was the controller, with a motion-capture camera keyed to Bandit's movements.

"It's like floating in space," G. later told me. "It's not like lifting barbells or anything." Then he got serious. He developed a strategy, waiting at the surface and then surprising the orange mackerel. Bandit, with a remorseless pink grin right out of "American Psycho," ate the fish with bone-crunching gusto.

G. was able to play the game for almost forty minutes. "I was so wrapped up in the game, I wasn't noticing that chair," he said. Before his stroke, G. provided job training to people with special needs. Now he is unemployed and living on disability. Several months ago, his insurance stopped covering physical rehabilitation, despite his eagerness to continue.

G.'s eyes began to blink rapidly. "I am tearing up," he apologized. For a long time, he said, he'd felt as though he'd "fallen through the cracks." His arm had come to feel like a fleshy metonym for the rest of him, for the way the health-care system regarded him—as something broken, swept out of sight. "I would say that, for us, they just want you to cope with what you have left."

In "Gemini," the Tournier book, there is a passage in which the surviving brother compares his amputated limb to his dead twin. He describes his longing as a ghostly reaching through space. We often conceive of reminiscence as a backward movement through time, but everyone knows that grief can be disorientingly nonlinear, extending radially through the past and the future. The loss of motor function,

according to many of the stroke patients with whom I spoke, is akin to a kind of bereavement.

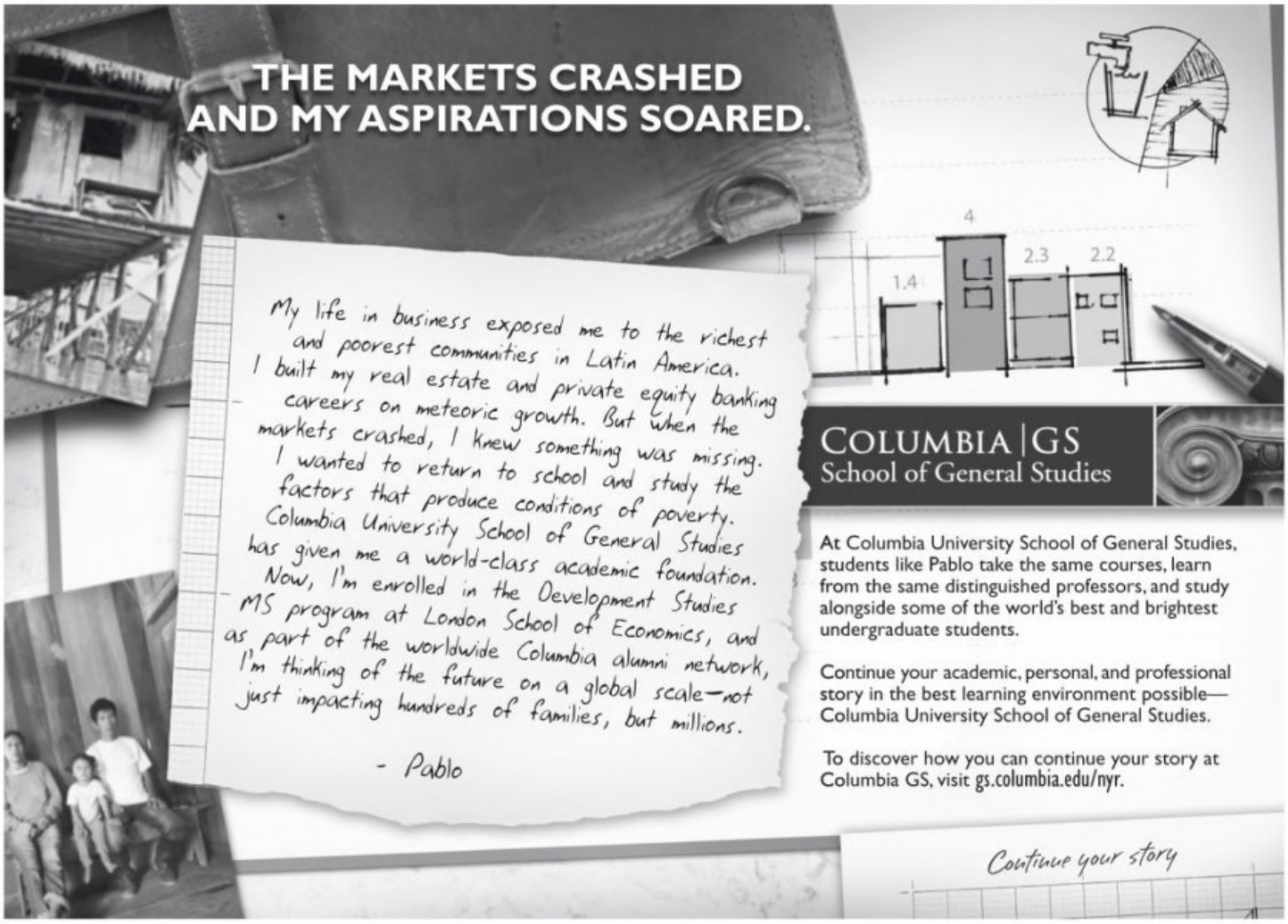
In March, Krakauer flew with Roy to Zurich to set up a wing of the trial there. Patients with chronic stroke who tested the protocols loved the game, and the Kata team found this deeply gratifying. "In these cases, outside of the sensitive window we're likely not reversing the deficit," Krakauer said. But patient feedback at Johns Hopkins and in Zurich suggests that the game may provide an unexpected psychological benefit—a kind of "motor psychotherapy." With the robot's assistance, patients could use their semi-paralyzed arm to achieve something again, in the blue world of the game.

The game's commercial launch has been a more equivocal experience for Roy, Ahmad, and McNally. Shark Eaters: Rise of the Dolphins, the precursor to Bandit's Shark Showdown, distributed in the Apple store in October, 2014, the week that Krakauer's trial was approved by the Johns Hopkins review board. With no marketing dollars, Max and Haley was hoping for reviews from industry publications such as *Kotaku*, and for a coveted spot on Apple's featured apps chart. But, despite some positive reviews, the Apple feature didn't happen, and the media attention the game received has focussed almost exclusively on its potential as stroke therapy. "Nobody knows about Max and Haley," Ahmad said. Many people both within and without Johns Hopkins's walls assumed that Krakauer had created the game.

McNally is the artistic director of the Kata Project, but there was no model for such a position in the School of Medicine. The administration initially tried to reclassify her as a medical-illustration intern. McNally has reddish-brown bangs that frame a round, wholesome face; she told me that people outside of BLAM! tended to view her as a sort of plucky graduate student. Her voice tightened as she recounted some recent interactions with journalists, potential donors, and certain people in the university's administration. She'd felt invisible to them. "It's my company, too," she said. "It's our game. And what we've done isn't possible without all of us."

Krakauer said, "Because I started this in my lab, and because there's so much neuroscience and clinical interest, I get a little bit too much of the attention, and I don't want that." A sort of irony seemed to be at play here, he said: the tendency to wrongly dichotomize knowledge and skill, "intellectual" work versus "hands-on" labor, seemed to be getting recapitulated at an institutional level.

For artists like McNally, and for systems engineers and computer programmers like Roy and Ahmad, there are well-established career paths. Roy, who previously worked for Microsoft and for corporate gaming companies,



told me, "I was all set to leave for industry until this happened. I can go out West—I can make a hundred starting, or I can make thirty-five here? That doesn't make sense." McNally said, "All of us hated this idea that you have to choose between academia and industry—that it's one path or the other and they don't ever cross. You do good, or you make money. We really wanted to do both things."

Krakauer is anxious about his ability to retain the people who make up the Kata Project. "I came to Hopkins to set up a center," he said. "This work cannot be done based on single investigators getting N.I.H. grants." He feels that a group like Kata is essential to BLAM!'s work, and says they have the potential to become a university-wide resource: to "Pixar-up the health-care and scientific space." But when he arrived there was no model in place to sustain such a group at Johns Hopkins. "We don't know how to hire them, we don't know how to pay them, and we don't know how to acknowledge them," he said.

Last May, a Silicon Valley company tried to recruit Ahmad from the medical school. I asked him what it would take to keep the Kata team together at Johns Hopkins. He jokingly sent me a link to a clip from "Jerry Maguire": Tom Cruise yelling, "Show me the money." In September, Ahmad was promoted to director of innovative biomedical engineering, a position created for him by Justin McArthur, the director of the Neurology Department at Johns Hopkins. McArthur told me that the School of Medicine is also clearing unused labs to provide BLAM! with room to grow.

Max and Haley has updated the game four times. While the cetacean locomotion grows increasingly realistic, other features of the game have become more fantastical, and slightly more violent. You can stun sharks with a "tail bolt," and flood the ocean with fireworks that look like exploding pomegranates. Sales have been modest, but Roy told me that the game is developing something of a cult following. Ed Catmull, a co-founder of Pixar, stopped by the BLAM! lab during a visit to Johns Hopkins in May. Ahmad, describing the visit to me, was the happiest I'd ever heard him—Catmull is a hero of his, and the sophisticated whimsy of Pixar's animation has been a huge influence on the Kata Project. Catmull told me in an e-mail that he loved the group's energy, and its use of gaming machines. He wrote, "It is a great example of both original research and joining together the ongoing development of two different technologies. It will also teach us something about learning and brain development that will go way beyond helping stroke victims."

Ahmad and Krakauer both credited the game's high quality to its hybrid model of development. By designing the commercial game "to compete with the best games on the market," Krakauer said, the Kata team was able to create what he feels is the best kind of game for neurorehabilitation. Ahmad said, "We had a choice: we could have made much simpler things. John would not let us do that. He made me do the hardest possible thing, the magic that is difficult."

Perhaps one day the BLAM! lab will be able to "self-fund on the order of hundreds of millions," as its Web site ambitiously proposes; as of this moment, it is still dependent on the traditional funding ecosystem. Susan Fitzpatrick, of the James S. McDonnell Foundation, which has funded the stroke-rehabilitation trial, said that she was pleased with its progress: "Regardless of what the outcome is, it's going to tell us something important—in this case, when is the optimal time for delivery of rehabilitation? Success, as we define it, will be an answer to the question."

She added, "Of course, we are hoping for a positive result."

It will be several years before the findings are published. In the meantime, Krakauer and the BLAM! lab are aggressively pursuing various targets. The last time I visited the lab, they were ripping out more sinks to create a machine shop. The next steps, Krakauer said, will be the 3-D printing of assistive devices to help with the rehabilitation of hands and legs.

Krakauer and I had our final dinner together at a quiet Baltimore restaurant near his home. Diners' faces bloomed and faded in the wavy light produced by many tiny candles. Krakauer seemed a bit beleaguered. There were many logistical challenges to recruiting patients during the acute period, he said. They were often very sick; they were geographically dispersed. Earlier that morning, he'd examined a friend's mother in his home; the rest of the day had been spent setting up the trial protocols. His arms, which were usually ottery when he spoke, lay rigid on the table.

Then Krakauer's vision began to toggle, his focus shifting from the myopia of daily administrative hurdles to the sprawling darkness at the frontiers of his field. He began telling me about upcoming BLAM! experiments investigating the universal laws of the brain, the "biological invariances" that underwrite all human movement. Now his arms were prowling the air, as if assisting with the invisible manufacture of meaning. Krakauer compared BLAM!'s work in basic science to that of "an alien piecing together the rules of basketball": "There are rules, and instead of them being man-made rules . . . these are the rules of the motor system, these are the rules of the brain."

Talking to Krakauer, I thought a lot about this everyday miracle—our capacity to consciously formulate goals, and to reach for them. Our goals can be as close at hand as a coffee cup or as coldly distant as the horizon beyond our deaths.

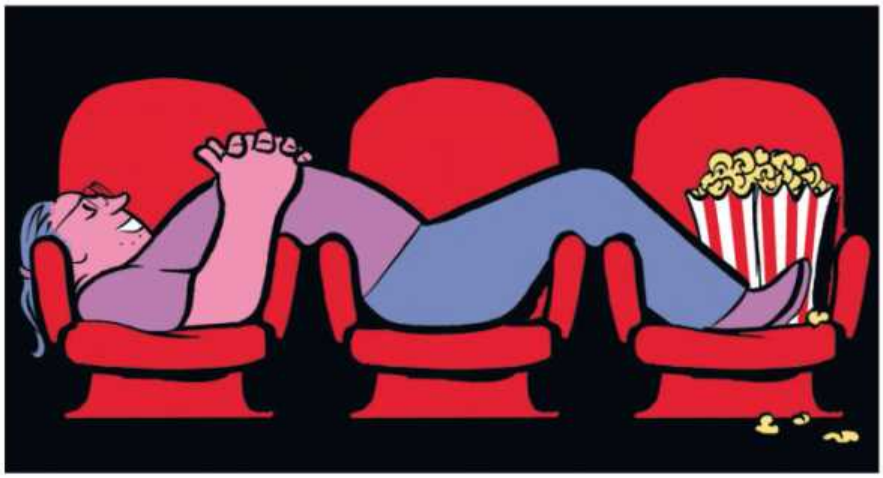
Candlelight worked itself up the wick, pasting twin red leaves onto John's glasses. I blotted wax with a knuckle, newly grateful for my ability to take this tiny, voluntary action. Krakauer was explaining the pleasure he took in surprising the motor system into "giving up its secrets" with a well-designed experiment: "It's amazing that there's *form* and *structure*, truth, that it actually is discernible. Why did the motor system, the brain, turn out to have a logic? You know, it didn't have to. You could imagine it being sort of chaotic, selfish, serendipitous, and perverse."

His arms floated over their tapering shadows on the tablecloth. "Instead, it has structure, reproducible invariance. It's amazing. I get tachycardic. I think, Oh, my God. *That's* how the world devised this." ♦

SHOUTS & MURMURS

AN HONEST FILM REVIEW

BY JESSE EISENBERG



NISHANT CHOKSI

This week, I'm reviewing "Paintings of Cole," which I didn't like, because the press screening was all the way uptown, and there were huge delays on the J train.

The movie, which was written and directed by Steven Kern, who also stars, tells the story of a young man named Cole, who is tasked with bringing down the Italian Mob. Cole uses his paintings to send secret messages to the police, which pisses me off, because in grad school I wrote a short story with basically that exact idea. And I failed the grad-school class, but Mr. Kern is getting early Oscar buzz. Justice? Not in this life.

Before the film started, the studio girl who set up the screening smiled at me and thanked me for coming. She told me her name, but I wasn't paying attention, because I was trying to work out whether sleeping with her would be a conflict of interest. I think her name started with an "R," though. Rebecca? Rachel? Or it could have been something weird. Reba? Are people still named Reba?

In the movie, Cole, a happily married father of two, is an abstract painter, which raises the question: How can he afford a brownstone in the West Village? I've been writing movie reviews for a blog that attracts more than eight hundred and forty-five unique views a month, and I live in the kind of housing complex that rappers brag about escaping.

Cole's wife is played by the supermodel turned actress Stephanie Anderson, who looks kind of like Jenny Kramer, a girl who was nice to me in middle school, and whom I probably could have dated if she hadn't transferred high schools. I wonder what Jenny's doing right now. She's probably wondering what *I'm* doing. Funny.

Anyway, Cole witnesses a murder and is pursued by members of the Mafia, who start buying his art. I couldn't figure out if they were buying his paintings to see if they somehow revealed who the murderer was, or if they were buying his paintings to get close to him, so that they could kill him. This confusion could have been the fault of Kern's screenplay, or it could have issued from my sneaking out of the screening room to pee during an important scene.

When I got back from the bathroom, I asked the critic next to me (from the *Times*) why the Mob was pursuing Cole, and he whispered that it was the same reason "the French colonel pursued normalcy in Buñuel's 'The Discreet Charm of the Bourgeoisie.'" No help there. Pretentious jerk.

I thought about asking Reba, or Raquel, but I didn't want her to think that I hadn't been paying attention.

And the *Times* critic seemed to love the movie, which is no surprise, because the *Times* loves everything. Well, everything except me. I went in for an interview three years ago, with a résumé and a packet of my reviews, and they rejected me. But the joke's on them, because I cancelled my subscription, and now I use my friend's password to break through their paywall.

The standout performance was by Peter Jaworski, who played the Mob boss's son, Sonny. Sonny is a ladies' man, even though Jaworski is at least two or three inches shorter than I am. Kudos to you, Mr. Kern, for your casting choice. If a shrimp like Jaworski can sleep with Stephanie Anderson, then I could certainly date a little studio intern like Ramona. Or was it Rosalind?

After the screening, I approached the studio girl and said, "Hey there, Rhonda, how about you and I make some abstract art of our own?" She gave me a look that simultaneously said, "You're a disgusting person" and "My name is not Rhonda, or anything remotely similar to Rhonda." And, with that, my already bad day was ruined.

In sum, these are the main problems with "Paintings of Cole": it was inconveniently shown on the Upper West Side, written by a guy I envy, screened by a cute intern whose name was too confusing to remember, based on an idea that I poorly executed in grad school, and praised by the *Times*, which rejected me.

Nonetheless, "Paintings of Cole" is easily the best movie of the year. I'm saying this only in the hope that the studio might print my name after a blurb on the movie poster. And I've always wanted to have my name on a movie poster. How cool would that be? Like, back in New Jersey, Jenny Kramer will be at her local multiplex, and she'll see my name on the poster for "Paintings of Cole" and be, like, "His opinion is on a movie poster! I should call him and ask for his opinion about sleeping with me." Then we actually *would* sleep together. And she would give me a great review. ♦

LETTER FROM CALIFORNIA

THE TRIP PLANNERS

The unusual couple behind an online encyclopedia of psychoactive substances.

BY EMILY WITT

You can't tell a great deal about the Web site Erowid from its home page. A tagline reads, "Documenting the Complex Relationship Between Humans & Psychoactives." This text is surrounded by photographs: a cactus, a cannabis bud, a bottle of ketamine, tabs of LSD. The design looks old, Web 1.0 old, with a simple typeface and a black background. The Tolkienesque name, the F.A.Q. page reveals, was coined with assistance from a dictionary of Indo-European roots. It means, roughly, "earth wisdom."

People who are interested in psychoactive cacti, ketamine, and LSD are generally unfazed by strangeness. Any such person will likely know of Erowid, as will most toxicologists and many E.R. doctors. When the site launched, in 1995, it served as a repository of drug-culture esoterica, drawing just a few hits a day. Today, Erowid contains highly detailed profiles of more than three hundred and fifty psychoactive substances, from caffeine to methamphetamine. Last year, the site had at least seventeen million unique visitors.

In October, on the twentieth anniversary of Erowid's launch, I travelled to the home of its founders, in the Gold Country of northeast California, where the Central Valley gives way to the Sierra Nevada and road signs along I-80 start marking the altitude. The hills are dotted with Gold Rush museums and monuments, along with evidence of a thriving cannabis-growing scene. Local television weathermen refer to the region as the Mother Lode.

The founders of Erowid are a couple in their mid-forties—a man and a woman who call themselves Earth and Fire, respectively. Their names date from 1994, when, as recent college graduates living in the San Francisco Bay Area, they went to a Menlo Park storefront to sign up for a dial-up account and for their first e-mail addresses: earth@best.com and fire@best.com. They live and work in a one-bedroom post-and-beam cabin, built in 1985 and surrounded by ten acres of forested land, on a high slope facing a ravine. The property's original owner was a collector of obsolete industrial machinery, and the house is a collage of California artifacts, including oak floorboards salvaged from nineteenth-century Southern Pacific Railroad boxcars. During my visit, Earth, who is tall and lumbering and wears his hair in a ponytail, identified strains of a Grateful Dead track wafting from the home of a distant neighbor. Fire, who is more assertive and fast-spoken than Earth, has dark hair and fine features that often earn her comparisons to Björk.

On Erowid, which is run by Earth and Fire with the help of two off-site staffers and many volunteers, you can read about drum circles in the "Mind & Spirit" section, and about Jerry Garcia in "Culture & Art." You can also find the digitized research archives of Albert Hofmann, who first synthesized LSD. But the centerpiece of the site is "Plants & Drugs." Each substance has a "vault," which includes pages on such topics as dosage, effects, legal status, and history. Some of that information is derived from "experience reports," which are descriptive accounts of drug trips that anyone can submit.

Since 2000, Erowid has received more than a hundred thousand reports and has published about a quarter of them. Some are positive: "The Inner Eternity," "Spiritually Orgasmic."

Erowid seeks to be a reference for everyone from the village stoner to the drug czar.

HAND LETTERING BY MOUSECAKE

PHOTOGRAPH BY ANDREW B. MYERS

Others are not: "Existential Horror," "Unimaginable Depths of Terror," "Convulsions, Seizures, Vomiting." Reports are reviewed by a few dozen specially trained volunteers, who range from college students to computer scientists. Each submission is read twice, and the best ones are passed on to a handful of senior reviewers for final selection.

At one time, the samizdat on drugs was so rare that those who found it seemed like sages at parties and in college dorms. Earth and Fire call such enthusiasts, and anyone extremely knowledgeable on the subject, drug geeks. Earth said that he "considers it an honor" to be among them. In the eighties, President Ronald Reagan's war on drugs sent the geeks into hiding. An ad sponsored by the Partnership for a Drug-Free America featured a father delivering a tearful graveside monologue, and showings of some Hollywood films included public-service announcements from the likes of Clint Eastwood and Pee-wee Herman, who held up vials of crack before the phrase "The thrill can kill" appeared on the screen. People who wanted both to try drugs and to know the risks had difficulty finding any credible guidance.

But by the mid-nineties a fragmentary drug-geek community had started sharing information on e-mail lists such as Leri, Web sites such as Deoxyribonucleic Hyperdimension, and Usenet groups such as alt.drugs.psychedelics. The geeks and the government continued to ignore one another. In 2002, during a talk at the consciousness-studies conference Mind States, in Jamaica, Fire said, "From the establishment viewpoint, it's surprising if new data come out of the drug-using community. In the drug-using community, it's surprising if information that's useful comes out of the establishment." Earth and Fire's idea was to close the rift: to maintain a comprehensive data set that could serve as a primary reference for everyone from the village stoner to the national drug czar.

Edward W. Boyer, the chief of medical toxicology in the department of emergency medicine at the University of Massachusetts Medical School, in Worcester, first became aware of the drug-geek sites in 1997. A pair of high-school students had ended up in his emergency room after going online and learning how to synthesize the sedative GHB at home. "My first thought was, It's really bad—people are potentially learning online about new drugs to abuse," he said.

In 2001, Boyer wrote a research letter to the *New England Journal of Medicine* alleging that Erowid and other "partisan" Web sites were outperforming federal antidrug sites in the search results for ecstasy, GHB, and certain other drugs. But during the aughts Boyer paid attention to assessments of new drugs as they went up on Erowid, and found that his emergency department did not receive an influx of poisonings. Instead, Erowid taught Boyer the street names of unfamiliar drugs, along with the basic chemicals that they contained. "We emergency physicians pride ourselves on being pretty close to the street," Boyer told me. "Erowid just blew the doors off what we do."

According to the 2014 National Survey of Drug Use and Health, nearly half of Americans over twelve have tried an illicit drug. They may borrow Adderall from a friend to work harder, or Xanax to reduce anxiety; they may use cocaine to have more fun at a party or ayahuasca to contemplate the great questions of life. Today's experimenters can also partake of many new psychoactive substances. In recent years, suppliers have expanded into a wide range of synthetic chemicals that, until they attract government attention, go untargeted by molecular bans in the United States and abroad. Once they have been prohibited, these "research chemicals," as Earth and Fire call them, can be modified in labs and sold anew; they are often cheap and can be bought through online marketplaces.

Erowid is an educational nonprofit, whose mission is to "provide and facilitate access to objective, accurate, and non-judgmental information" about psychoactive substances. Users can assess benefits and risks by reading experience reports, and many vaults have a summary "Health" page. Erowid has also formulated a set of standard warnings, or "Erowid Notes," which are used to flag risky activities in experience reports ("Driving while intoxicated, tripping, or extremely sleep deprived is dangerous and irresponsible because it endangers other people. Don't do it!").

The average age of Erowid's thirty thousand Twitter followers is twenty-six. The most frequently looked-at profiles are those of LSD, MDMA, and mushrooms. For years, Erowid's traffic has declined during school breaks—a gauge of its popularity among eighteen-to-twenty-five-year-olds, the demographic most given to experimenting with drugs. Earth and Fire have spoken before the American Academy of Clinical Toxicology and the National Institute on Drug Abuse, and in 2011 the reform-minded Drug Policy Alliance gave them the Dr. Andrew Weil Award for Achievement in the Field of Drug Education. They have also co-authored several papers in peer-reviewed journals (for example, "Use Patterns and Self-Reported Effects of Salvia Divinorum," in *Drug and Alcohol Dependence*) and have collaborated on projects related to such drugs as hallucinogens and opiates with researchers at various institutions, including N.Y.U. and Johns Hopkins.

As a condition of talking to me, Earth and Fire insisted that their "driver's-license names" not be published, even though their given names can be easily found. Earth explained, "Everyone calls us Earth and Fire, approximately, except for the robots." Like the volunteer medics who used to patrol parking lots at Grateful Dead concerts, they want to be seen as the straights among the weirdos and the weirdos among the straights. They want readers to focus on the usefulness of Erowid's information, not on the authority of the people publishing it.

Earth and Fire spend most days in their living room, which is also their office. Fire is the site's main editor and fund-raiser, and Earth attends to the technical side. They work at a shared desk with a landline and six computer monitors on top, and towers of hard drives underneath. A stack of books on the coffee table includes a copy of "Sapo in My Soul," about an Amazonian

frog whose skin secretes a psychoactive compound. During my visit, Earth and Fire would wake up at noon and work until 4 A.M., with a pause for dinner around 8 P.M.—a time that their cats, Eos and Nyx, marked by staring expectantly until they were fed.

Earth does most of the cooking; Fire is the sous chef and the dicer of garlic. Each uses a "personal bowl." Fire explained, "This is my bowl. I eat every meal out of my bowl. I don't have to wash my bowl before I eat out of it if I don't want to. He never has to wash my bowl."

I received my own bowl for the three nights I ate with Earth and Fire. They are vegetarians, and, for the past twenty years, they have subsisted on healthy snacks and one meal, at night. Dinner consists of what their friends call "Erowid chow": vegetables served over a mixture of brown and wild rice. They don't eat sweets. One night, they offered me a Carr's whole-wheat cracker for dessert, which I declined.

As for psychoactive substances, we ingested only Rex-Goliath Pinot Grigio and Chateau Ste. Michelle Sauvignon Blanc. Drug geeks are not necessarily heavy drug users: Earth and Fire say that they have tried LSD, MDMA, and psilocybin mushrooms, but not cocaine, heroin, or meth; of prescription painkillers, Earth said, "I prefer an ibuprofen and a beer."

For small doses of caffeine, Earth and Fire drink Diet Coke. Earth told me that it tastes "like the future."

"Like a robot!" Fire said.

When Earth and Fire say "I," they usually mean "we." They describe themselves as life partners, and each wears a stainless-steel earring. They don't have kids, and call themselves "online socializers." They speak in tandem, like twins in a children's novel. When one of them left the room, I felt uneasy.

Earth said, "We used to use the term 'soul mate.'"

"But it annoys people," Fire said.

Earth and Fire grew up in the northern suburbs of St. Paul, where they attended the same schools. Earth's mother was a therapist and his father a designer of supercomputers, who founded the Supercomputer Systems Engineering and Services Company. Fire's parents owned a consulting business. At forty, Earth's mother separated from his father, later becoming a minister in the United Church of Christ. Fire's parents, after they retired, moved to Africa and did educational work through the Lutheran Church.

In 1987, Earth left for New College, in Sarasota, Florida, and Fire for Miami University, in Ohio. They started dating after their freshman year. In their sophomore year, Fire joined Earth at New College, which had been established, in the nineteen-sixties, as an experimental learning community. Earth and Fire refer to the ideas that they spread through Erowid as "memes." One meme is that nobody should take a drug without first being able to consult a reliable source of information about it. On arriving at New College, Earth had been offered LSD, psilocybin mushrooms, and MDMA. He declined every overture, and, by the end of the couple's time there, neither had tried anything other than pot and alcohol.

Fire earned a general humanities degree, and Earth designed his own course, Language and Culture. They read books on philosophy, anthropology, Buddhism, and meditation. As Earth remembers it, a turning point came when one of their close friends argued that without having tried a psychedelic "you could not be taken seriously as an engaged intellectual who was interested in topics of spirituality and metaphysics." Other friends agreed.

"We turned out to be the kind of people who like to research something first," Fire said. "And it turned out to be impossible." Earth had to drive all the way to the University of South Florida, in Tampa, to photocopy some scientific papers about MDMA. He and Fire started collecting the few books on psychedelics that they could find locally, and they observed their friends experimenting. Sometimes, Earth and Fire showed other people their research materials. "We had more computers than anybody else," Earth said. "We made a database of all the movies we'd ever seen and rated them and wrote little descriptions."

They graduated in 1992 and returned to Minnesota. Earth designed databases at his father's company, and

Fire wrote manuals. Within a year, they felt that they had learned enough about LSD to try it. They took a quarter of a blotter each—within the range of a "light" dose, according to Erowid.

While tripping, Earth and Fire experienced a sense of wonder in looking at everyday things. Earth told me, "It made us very much more aware of how different states of consciousness are constantly flowing by, and that one can—"

"—have some control over that," Fire said.

On Halloween, 1994, Earth and Fire, dreading another Minnesota winter, packed their belongings into a U-Haul and drove to Northern California. I asked them if they were hippies.

"We were hippie-ish," Fire said.

"It was tech," Earth said.

"Hippie liberals."

"Tech hippie liberals."

They crashed in the laundry room of Earth's brother, in the bucolic Bay Area suburb of Woodside. Earth was working remotely for his father's company, and Fire, who was looking for freelance jobs, decided to teach herself Web design. They bought a VW camper van.

On Labor Day weekend in 1995, they picked up some friends for a camping trip at Lake Tahoe. One of their friends had a flyer announcing a festival called Burning Man. They drove past Tahoe to the Black Rock Desert, where the festival was taking place, and veered around a man in a straw hat who was trying to charge admission. They parked next to a group of Nevada locals, who were cooking heroin by a campfire. In subsequent years, Earth and Fire would set up a geodesic dome and bring a whiteboard on which visitors mapped out molecular-synthesis paths.

Also in 1995, Fire began work on a Web site that would use the couple's collected materials on drug subculture as a data set. On drives up to San Francisco to see friends, Earth and Fire debated what to call the site; they knew that it was important to make the name unique. In September, they rented a house on a mountain peak in Sky Londa, with a view of the Pacific, on the site of a former tuberculosis sanitarium. In October, they launched Erowid.

Earth and Fire stayed in Sky Londa for seven years. They posted the site's first warnings in 1996, after watching a friend get sick after accidentally taking a large dose of GHB at Burning Man. Fire said that the early site "felt to us like an act of civil disobedience." They worried that the authorities might shut them down, and to this day they operate their own server, burn all envelopes sent to them with return addresses, and use search software that will not generate data for Google. (They say that they have never had any legal problems.)

During those years, Earth and Fire became friends with the Bay Area chemist Alexander Shulgin, who discovered more than two hundred psychoactive compounds, and his wife, Ann. Together, the Shulgins wrote the books "Pihkal" (Phenethylamines I Have Known and Loved) and "Tihkal" (the same acronym, but for tryptamines); their Friday-night dinners, or F.N.D.s, served as regular gatherings for local drug geeks, among others. Taking drugs at the meal was not allowed, but Earth and Fire got to know Bob Wallace, a software pioneer and former Microsoft employee, who became Erowid's first donor and major supporter. Wallace encouraged the couple to work on the site full time, and, starting in 1999, Fire did so; Earth joined her the following year.

By then, Internet users were no longer a small group of tech-savvy familiars. Teen-agers were trying to figure out how big a dose of LSD they could safely take, and at the end of 2001 the site was getting more than two hundred thousand hits a day. In 2002, Earth and Fire were priced out of the Bay Area; they moved to the Gold Country. That same year, Bob Wallace died. The period that followed was financially trying, since Earth and Fire had decided early on against posting advertisements. By 2008, however, Erowid had become a nonprofit; its current operating budget is three hundred thousand dollars. In February, Reddit users deemed it the fourth-most-worthy nonprofit out of more than eight thousand candidates, granting the site a donation of exactly $82,765.95. Erowid came in ahead of NPR.

One day, I sat on a paisley couch as Fire compiled a new vault, for the chemical methoxphenidine. Like ketamine, to which it is often compared, MXP produces a dissociative out-of-body experience. The drug was patented by Searle in 1989, as a possible treatment for neural injury, but its recreational use wasn't documented until 2013, on user-moderated discussion forums like Bluelight. Erowid deliberately lags behind such sites, in order to let a more representative sample emerge.

In April of this year, an Erowid user from Virginia anonymously submitted a sample of MXP to a licensed lab in Sacramento that the site works with, as part of an initiative that Erowid calls EcstasyData. Since then, Earth and Fire had been waiting for experience reports to arrive, and now Fire pored over the dozens that had been winnowed down by the triage team, along with other online accounts. One report read, "The space between me and my phone is enormous. Is my arm really long now?"

Fire also looked up the chemical's molecular structure and scrolled through toxicology reports on PubMed, a search engine for biomedical literature. Using estimates mentioned in the reports, and after chatting with users on drug forums, Fire settled on a tentative dosage table, sending it out to a group of Erowid volunteers for comment. In the MXP vault, the dosage page will retain the "very tentative" label for perhaps a year, which is typically long enough for about a hundred reliable reports to emerge.

Six days later, Fire tweeted that the vault had opened. The landing page displayed a biohazard symbol, which Erowid uses to designate drugs that "should be considered experimental chemicals." A warning reads, "There have been several deaths associated with its use." I clicked "Law," and learned that the chemical is not prohibited in the U.S. but is "not approved for human

consumption." It had just been banned in China. On the "Effects" page, I read, "Increase in heart rate and blood pressure," "Nasal discomfort upon insufflation," and "Sense of calm and serenity."

Erowid adopts "the perspective of a user rather than that of a health-care professional," according to Andrew Monte, an emergency physician at the University of Colorado School of Medicine, in Aurora, and a medical toxicologist at the Rocky Mountain Poison and Drug Center, in Denver. He contrasted Erowid with the National Poison Data System, a standard resource in E.R. work, which he described as "a series of check boxes that are geared toward collecting medical data." Erowid, he said, instead creates "a rich tapestry of what users are wanting to experience, what they do experience, and what the potential downsides are."

The experience reports can also be helpful to researchers. Erin Artigiani, the deputy director for policy at the Center for Substance Abuse Research, at the University of Maryland, College Park, said that she relies on the reports in her work as the co-coördinator of the National Drug Early Warning System. (The system, which is supported by the National Institute on Drug Abuse, tracks drug trends by monitoring poison-control reports, social media, and other sources.) She called Erowid "a useful tool for our initial phases, where we're detecting and looking for what's emerging."

Roy Gerona, a clinical chemist at the University of California, San Francisco, told me that he has used Erowid as a source to identify research chemicals in toxicology cases. "Designer drugs have a really fast turnaround," he said. "The primary literature cannot keep up." For Gerona, Erowid occupies a useful middle ground between unedited drug forums and scientific journals.

Is Erowid accurate? Artigiani told me that the site "makes a concerted effort to be accurate with what it's sharing." Gerona described Erowid's information as "a good starting point." Still, Earth and Fire readily admit that they cannot correct all errors, and that experience reports are not peer-reviewed studies. The reports are meant to be read en masse, creating a broad spectrum of impressions for regular users, just as they do for medical professionals. According to Fire, any individual document must be taken "with a grain of salt."

One reason that Earth and Fire haven't tried opiates themselves, Fire told me, is that "Erowid's legacy would take a nosedive" if one of them were to die of an overdose. But the site does not unequivocally advise against taking opioids or any other drug, no matter how dangerous or addictive. Earth told me that the goal of the site is not to "shape behavior," and that, even if it were, proscription would be the wrong approach: "If you say no to one drug, you're essentially saying yes to all the others." They told me that the facts indicate only which drugs are more dangerous than others, not which ones are "good" or "bad."

Oxycodone, the tenth-most-popular drug on the site, is described as being "widely available by prescription" and as "notoriously addictive, leading many users to have problems controlling their own use." Some drug experts don't see what's wrong with urging people to avoid such a substance. "The Web site should say, 'Don't do it,'" Robert DuPont, the first director of the National Institute on Drug Abuse, who served as the drug czar under Presidents Richard Nixon and Gerald Ford, told me. "We don't say, 'Most people who don't wear seat belts never suffer any injury,' though that's true. That would be irresponsible in public health. Instead we say, 'Wear your seat belt every time you drive.'"

Corey Waller, an addiction specialist at the Center for Integrative Medicine, in Grand Rapids, Michigan, said the site was "without checks and balances." He works with drug users who land in emergency rooms ten times or more a year. Addicts, he told me, would not read Erowid with the skepticism that the site presumes. "Part of the disease is that they're not able to make logical decisions."

Fire said that those who treat addicts "understandably see the whole world as—"

"—as a giant heroin overdose waiting to happen," Earth said.

"Our audience is not the most likely to become heroin addicts," Fire went on. "Our message might be, 'If you start finding yourself needing to increase your dosage, you're building tolerance. That means you're using too frequently.' "

Of course, no matter what the user's knowledge base, some drugs are more addictive than others. According to Edward Boyer, the recent opioid epidemic has proved that "exposure does matter." The greater the number of people who try certain habit-forming drugs, the more addicts America will have.

To the extent that Erowid does caution users, it is with infrequent warnings, such as the injunction against driving while high. Andrew Monte, of the University of Colorado School of Medicine, said that these standard cautions are disingenuous. "I would say that they're largely throwaway kinds of statements," he told me. "They're really put there almost as a protection, it seems to me, just for the operators of the site."

Earth said that warnings are good, but only insofar as they "help people put the risks and benefits into proper balance." As for the question of quantity, Fire said, "We don't over-add warnings, because then it's just all warnings." It's possible that the warnings they do include, some of which are echoed by drug users across the Internet, are taken more seriously as the result of being on Erowid, given its reputation for avoiding hyperbole. "We are developing a library, not a personal-use guide," Earth said.

Such statements put Erowid in a particular corner of the drug subculture. Recently, there has been a general uptick in the use of "harm reduction," some of it opportunistic. Bluelight, the drug-user forum, claims to be "reducing harm by educating the individual." Ross Ulbricht, the imprisoned founder of Silk Road, an online black market that sold drugs and other illicit goods and services, used the term in his legal defense. Fire told me that harm reduction is a goal for Erowid, but not a primary one.

Erowid's object is to help establish a conversation about drugs in which "actual accurate information is published and agreed upon." Fire said, "When we publish about a drug, some people will choose to do that drug who

otherwise might not have. But we can't just stay back where we are." Earth added, in an e-mail, "There will always be deaths, regardless of information or policy."

Sometimes, late at night, when Earth and Fire get tired, they turn on a football game. They happen to enjoy what Earth calls America's "head-trauma fest," but they also like to keep an eye on what common psychoactive substances (alcohol, sex drugs, caffeine, antipsychotics) are being advertised to television audiences.

Today, long after the "Reefer Madness" era, there is less consensus about which drugs are "good" and which are "bad," and the latter are less likely to be treated as such—the federal government includes marijuana in "the most dangerous class of drugs," yet twenty-three states have legalized its medical use and four permit its retail production and sale. In 2010, Congress changed sentencing rules for crack-cocaine possession, establishing higher-quantity thresholds for mandatory jail time. The Affordable Care Act requires insurance companies to cover substance-use disorders. As Mark A.R. Kleiman, a drug-policy expert at N.Y.U.'s Marron Institute of Urban Management, put it, "Drug policy is moving in a less hysterical direction."

Nevertheless, Kleiman said, "it's not as if the National Institute on Drug Abuse were conducting serious research on the intended effects of drugs on ordinary users." In a statement, Mario Moreno Zepeda, a spokesman for the White House's Office of National Drug Control Policy, used watchwords such as "evidence-based initiatives," but in the context of the Obama Administration's focus on "prevention, treatment, and recovery." According to Kleiman, "If some kid wants to know what drugs to use and what their risks are, he's not in a better position," particularly given the proliferation of new psychoactive substances. Earth seemed to agree: "Where we are in 2015 is substantially evolved from 1995, but things are still in a relative stone age for teaching people how to make good decisions about psychoactives."

Now Erowid's task will be to teach people not only about specific substances but also about what to do with a mysterious white powder. This meme is called "Know your substance," and, among those who understand that the "Molly" they bought on the street might not be MDMA, it has gained a following. They might try to determine what a substance is with a liquid reagent test, which can be conducted inexpensively at home, or they could send it to a lab through Erowid's EcstasyData program.

These hurdles are high, but, in Earth and Fire's view, they are necessary. Earth told me, "I don't feel that humans have ever been in this position before, where we have the ability to deliver to every single person in a rich society a variety of mind-altering chemicals." He added, "We're not that far away from having the ability to have the coffee-maker print our drugs for us."

"I don't think most seventeen-year-olds are ready for that," Fire said.

When Earth and Fire took me on a tour of their property, they showed me a three-story barn, filled with antique saws, a car-size diesel generator, and a gantry installed on railroad tracks. Their plan is to turn the top two stories into a library that would be open to researchers. "There should be generations of knowledge," Earth said. One current initiative is the Wisdom Cycle Project, which collects reflections from older generations about their drug use.

One afternoon, I asked Earth and Fire how they saw themselves in relation to psychedelic proselytizers like Timothy Leary and Terence McKenna, the drug philosopher. We were sitting on the couple's deck, overlooking the ravine. Deer picked their way through the leaves on the slope below.

"We're not showmen," Fire said.

"We're just not that fun," Earth said.

"We're not so into the 'woo' side of psychedelic stuff," Fire said. "But we try to keep it open and flowing, because we talk to a lot of people who are more into the 'woo-er' side."

"Well, but we also are 'woo,'" Earth said, pointing out that they had done their share of "sweat lodges and that sort of thing" in the nineties. "We're so 'woo' we're 'post-woo.'" They laughed.

The light had faded, and a gloom settled over the dry forest. Nyx the cat jumped onto the railing.

Earth said, "We just want to—"

"—be accurate," Fire said.

"Be accurate, but we also want to allow for all—"

"—to create room for other people to have their experiences." ♦

"Why don't we call that nameless dread of yours Bruce, and see if that helps."

• •

A REPORTER AT LARGE

THE DOOMSDAY INVENTION

Will artificial intelligence bring us utopia or destruction?

BY RAFFI KHATCHADOURIAN

I. OMENS

Last year, a curious nonfiction book became a *Times* best-seller: a dense meditation on artificial intelligence by the philosopher Nick Bostrom, who holds an appointment at Oxford. Titled "Superintelligence: Paths, Dangers, Strategies," it argues that true artificial intelligence, if it is realized, might pose a danger that exceeds every previous threat from technology—even nuclear weapons—and that if its development is not managed carefully humanity risks engineering its own extinction. Central to this concern is the prospect of an "intelligence explosion," a speculative event in which an A.I. gains the ability to improve itself, and in short order exceeds the intellectual potential of the human brain by many orders of magnitude.

Such a system would effectively be a new kind of life, and Bostrom's fears, in their simplest form, are evolutionary: that humanity will unexpectedly become outmatched by a smarter competitor. He sometimes notes, as a point of comparison, the trajectories of people and gorillas: both primates, but with one species dominating the planet and the other at the edge of annihilation. "Before the prospect of an intelligence explosion, we humans are like small children playing with a bomb," he concludes. "We have little idea when the detonation will occur, though if we hold the device to our ear we can hear a faint ticking sound."

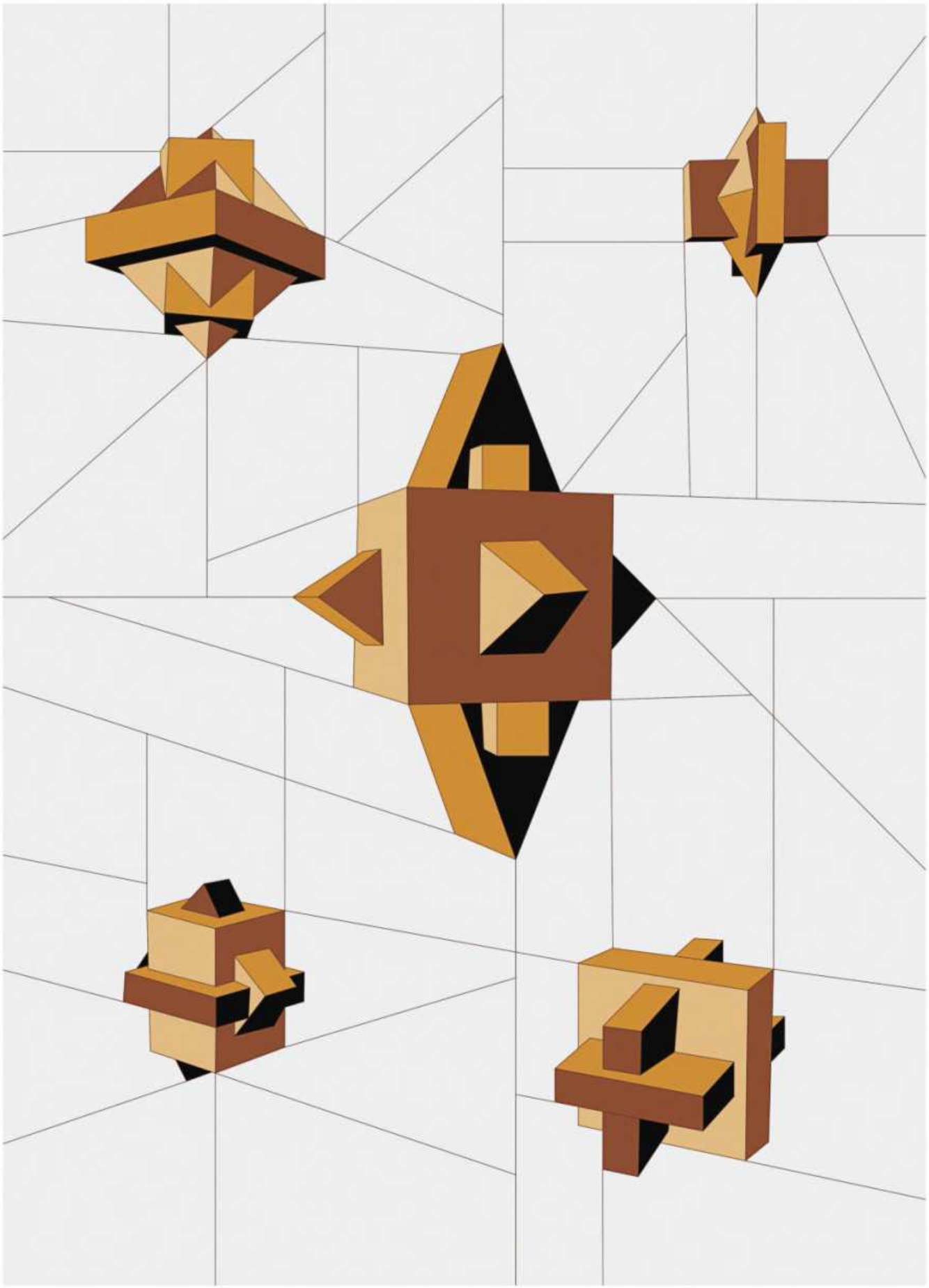
At the age of forty-two, Bostrom has become a philosopher of remarkable influence. "Superintelligence" is only his most visible response to ideas that he encountered two decades ago, when he became a transhumanist, joining a fractious quasi-utopian movement united by the expectation that accelerating advances in technology will result in drastic changes—social, economic, and, most strikingly, biological—which could converge at a moment of epochal transformation known as the Singularity. Bostrom is arguably the leading transhumanist philosopher today, a position achieved by bringing order to ideas that might otherwise never have survived outside the half-crazy Internet ecosystem where they formed. He rarely makes concrete predictions, but, by relying on probability theory, he seeks to tease out insights where insights seem impossible.

Some of Bostrom's cleverest arguments resemble Swiss Army knives: they are simple, toylike, a pleasure to consider, with colorful exteriors and precisely calibrated mechanics. He once cast a moral case for medically engineered immortality as a fable about a kingdom terrorized by an insatiable dragon. A reformulation of Pascal's wager became a dialogue between the seventeenth-century philosopher and a mugger from another dimension.

"Superintelligence" is not intended as a treatise of deep originality; Bostrom's contribution is to impose the rigors of analytic philosophy on a messy corpus of ideas that emerged at the margins of academic thought. Perhaps because the field of A.I. has recently made striking advances—with everyday technology seeming, more and more, to exhibit something like intelligent reasoning—the book has struck a nerve. Bostrom's supporters compare it to "Silent Spring." In moral philosophy, Peter Singer and Derek Parfit have received it as a work of importance, and distinguished physicists such as Stephen Hawking have echoed its warning. Within the high caste of Silicon Valley, Bostrom has acquired the status of a sage. Elon Musk, the C.E.O. of Tesla, promoted the book on Twitter, noting, "We need to be super careful with AI. Potentially more dangerous than nukes." Bill Gates recommended it, too. Suggesting that an A.I. could threaten humanity, he said, during a talk in China, "When people say it's not a problem, then I really start to get to a point of disagreement. How can they not see what a huge challenge this is?"

The people who say that artificial intelligence is not a problem tend to work in artificial intelligence. Many prominent researchers regard Bostrom's basic views as implausible, or as a distraction from the near-term benefits and moral dilemmas posed by the technology—not least because A.I. systems today can barely guide robots to open doors. Last summer, Oren Etzioni, the C.E.O. of the Allen Institute for Artificial Intelligence, in Seattle, referred to the fear of machine intelligence as a "Frankenstein complex." Another leading researcher declared, "I don't worry about that for the same reason I don't worry about overpopulation on Mars." Jaron Lanier, a Microsoft researcher and tech commentator, told me that even framing the differing views as a debate was a mistake. "This is not an honest conversation," he said. "People think it is about technology, but it is really about religion, people turning to metaphysics to cope with the human condition. They have a way of dramatizing their beliefs with an end-of-days scenario—and one does not want to criticize other people's religions."

Because the argument has played out on blogs and in the popular press, beyond the ambit of peer-reviewed journals, the two sides have appeared in caricature, with headlines suggesting either doom ("WILL SUPER-INTELLIGENT MACHINES KILL US ALL?") or a reprieve from doom ("ARTIFICIAL INTELLIGENCE 'WILL NOT END HUMAN RACE'"). Even the most grounded version of the debate occupies philosophical terrain where little is clear. But, Bostrom argues, if artificial intelligence can be achieved it



Nick Bostrom, a philosopher focussed on A.I. risks, says, "The very long-term future of humanity may be relatively easy to predict."

ILLUSTRATION BY TODD ST. JOHN

would be an event of unparalleled consequence—perhaps even a rupture in the fabric of history. A bit of long-range forethought might be a moral obligation to our own species.

Bostrom's sole responsibility at Oxford is to direct an organization called the Future of Humanity Institute, which he founded ten years ago, with financial support from James Martin, a futurist and tech millionaire. Bostrom runs the institute as a kind of philosophical radar station: a bunker sending out navigational pulses into the haze of possible futures. Not long ago, an F.H.I. fellow studied the possibility of a "dark fire scenario," a cosmic event that, he hypothesized, could occur under certain high-energy conditions: everyday matter mutating into dark matter, in a runaway process that could erase most of the known universe. (He concluded that it was highly unlikely.) Discussions at F.H.I. range from conventional philosophic topics, like the nature of compromise, to the optimal structure of space empires—whether a single intergalactic machine intelligence, supported by a vast array of probes, presents a more ethical future than a cosmic imperium housing millions of digital minds.

Earlier this year, I visited the institute, which is situated on a winding street in a part of Oxford that is a thousand years old. It takes some work to catch Bostrom at his office. Demand for him on the lecture circuit is high; he travels overseas nearly every month to relay his technological omens in a range of settings, from Google's headquarters to a Presidential commission in Washington. Even at Oxford, he maintains an idiosyncratic schedule, remaining in the office until two in the morning and returning sometime the next afternoon.

I arrived before he did, and waited in a hallway between two conference rooms. A plaque indicated that one of them was the Arkhipov Room, honoring Vasili Arkhipov, a Soviet naval officer. During the Cuban missile crisis, Arkhipov was serving on a submarine in the Caribbean when U.S. destroyers set off depth charges nearby. His captain, unable to establish radio contact with Moscow, feared that the conflict had escalated and ordered a nuclear strike. But Arkhipov dissuaded him, and all-out atomic war was averted. Across the hallway was the Petrov Room, named for another Soviet officer who prevented a global nuclear catastrophe. Bostrom later told me, "They may have saved more lives than most of the statesmen we celebrate on stamps."

The sense that a vanguard of technical-minded people working in obscurity, at odds with consensus, might save the world from auto-annihilation runs

through the atmosphere at F.H.I. like an electrical charge. While waiting for Bostrom, I peered through a row of windows into the Arkhipov Room, which looked as though it was used for both meetings and storage; on a bookcase there were boxes containing light bulbs, lampshades, cables, spare mugs. A gaunt philosophy Ph.D. wrapped in a thick knitted cardigan was pacing in front of a whiteboard covered in notation, which he attacked in bursts. After each paroxysm, he paced, hands behind his back, head tilted downward. At one point, he erased a panel of his work. Taking this as an opportunity to interrupt, I asked him what he was doing. "It is a problem involving an aspect of A.I. called 'planning,'" he said. His demeanor radiated irritation. I left him alone.

Bostrom arrived at 2 P.M. He has a boyish countenance and the lean, vital physique of a yoga instructor—though he could never be mistaken for a yoga instructor. His intensity is too untidily contained, evident in his harried gait on the streets outside his office (he does not drive), in his voracious consumption of audiobooks (played at two or three times the normal speed, to maximize efficiency), and his fastidious guarding against illnesses (he avoids handshakes and wipes down silverware beneath a tablecloth). Bostrom can be stubborn about the placement of an office plant or the choice of a font. But when his arguments are challenged he listens attentively, the mechanics of consideration nearly discernible beneath his skin. Then, calmly, quickly, he dispatches a response, one idea interlocked with another.

He asked if I wanted to go to the market. "You can watch me make my elixir," he said. For the past year or so, he has been drinking his lunch (another efficiency): a smoothie containing fruits, vegetables, proteins, and fats. Using his elbow, he hit a button that electronically opened the front door. Then we rushed out.

Bostrom has a reinvented man's sense of lost time. An only child, he grew up—as Niklas Boström—in Helsingborg, on the southern coast of Sweden. Like many exceptionally bright children, he hated school, and as a teenager he developed a listless, romantic persona. In 1989, he wandered into a library and stumbled onto an anthology of nineteenth-century German philosophy, containing works by Nietzsche and Schopenhauer. He read it in a nearby forest, in a clearing that he often visited to think and to write poetry, and experienced a euphoric insight into the possibilities of learning and achievement. "It's hard to convey in words what that was like," Bostrom told me; instead he sent me a photograph of an oil painting that he had made shortly afterward. It was a semi-representational landscape, with strange figures crammed into dense undergrowth; beyond, a hawk soared below a radiant sun. He titled it "The First Day."

Deciding that he had squandered his early life, he threw himself into a campaign of self-education. He ran down the citations in the anthology, branching out into art, literature, science. He says that he was motivated not only by curiosity but also by a desire for actionable knowledge about how to live. To his parents' dismay, Bostrom insisted on finishing his final year of high school from home by taking special exams, which he completed in ten weeks. He grew distant from old friends: "I became quite fanatical and felt quite isolated for a period of time."

When Bostrom was a graduate student in Stockholm, he studied the work of the analytic philosopher W. V. Quine,

who had explored the difficult relationship between language and reality. His adviser drilled precision into him by scribbling "not clear" throughout the margins of his papers. "It was basically his only feedback," Bostrom told me. "The effect was still, I think, beneficial." His previous academic interests had ranged from psychology to mathematics; now he took up theoretical physics. He was fascinated by technology. The World Wide Web was just emerging, and he began to sense that the heroic philosophy which had inspired him might be outmoded. In 1995, Bostrom wrote a poem, "Requiem," which he told me was "a signing-off letter to an earlier self." It was in Swedish, so he offered me a synopsis: "I describe a brave general who has overslept and finds his troops have left the encampment. He rides off to catch up with them, pushing his horse to the limit. Then he hears the thunder of a modern jet plane streaking past him across the sky, and he realizes that he is obsolete, and that courage and spiritual nobility are no match for machines."

Although Bostrom did not know it, a growing number of people around the world shared his intuition that technology could cause transformative change, and they were finding one another in an online discussion group administered by an organization in California called the Extropy Institute. The term "extropy," coined in 1967, is generally used to describe life's capacity to reverse the spread of entropy across space and time. Extropianism is a libertarian strain of transhumanism that seeks "to direct human evolution," hoping to eliminate disease, suffering, even death; the means might be genetic modification, or as yet uninvented nanotechnology, or perhaps dispensing with the body entirely and uploading minds into supercomputers. (As one member noted, "Immortality is mathematical, not mystical.") The Extropians advocated the development of artificial superintelligence to achieve these goals, and they envisioned humanity colonizing the universe, converting inert matter into engines of civilization. The discussions were nerdy, lunatic, imaginative, thought-provoking. Anders Sandberg, a former member of the group who now works at Bostrom's institute, told me, "Just imagine if you could listen in on the debates of the Italian Futurists or early Surrealists."

In 1996, while pursuing further graduate work at the London School of Economics, Bostrom learned about the Extropy discussion group and became an active participant. A year later, he cofounded his own organization, the World Transhumanist Association, which was less libertarian and more academically spirited. He crafted approachable statements on transhumanist values and gave interviews to the BBC. The line between his academic work and his activism blurred: his Ph.D. dissertation centered on a study of the Doomsday Argument, which uses probability theory to make inferences about the longevity of human civilization. The work baffled his advisers, who respected him but rarely agreed with his conclusions. Mostly, they left him alone.

Bostrom had little interest in conventional philosophy—not least because he expected that superintelligent minds, whether biologically enhanced or digital, would make it obsolete. "Suppose you had to build a new subway line, and it was this grand trans-generational enterprise that humanity was engaged in, and everybody had a little role," he told me. "So you have a little shovel. But if you know that a giant bulldozer will arrive on the scene tomorrow, then does it really make sense to spend your time today digging the big hole with your shovel? Maybe there is something else you could do with your time. Maybe you could put up a signpost for the great shovel, so it will start digging in the right place." He came to believe that a key role of the philosopher in modern society was to acquire the knowledge of a polymath, then use it to help guide humanity to its next phase of existence—a discipline that he called "the philosophy of technological prediction." He was trying to become such a seer.

"He was ultra-consistent," Daniel Hill, a British philosopher who befriended Bostrom while they were graduate students in London, told me. "His interest in science was a natural outgrowing of his understandable desire to live forever, basically."

Bostrom has written more than a hundred articles, and his longing for immortality can be seen throughout. In 2008, he framed an essay as a call to action from a future utopia. "Death is not one but a multitude of assassins," he warned. "Take aim at the causes of early death—infection, violence, malnutrition, heart attack, cancer. Turn your biggest gun on aging, and fire. You must seize the biochemical processes in your body in order to vanquish, by and by, illness and senescence. In time, you will discover ways to move your mind to more durable media." He tends to see

"I'm starting a startup that helps other startups start up."

"I hoped you'd like the size of it."

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the mind as immaculate code, the body as inefficient hardware—able to accommodate limited hacks but probably destined for replacement.

Even Bostrom's marriage is largely mediated by technology. His wife, Susan, has a Ph.D. in the sociology of medicine and a bright, down-to-earth manner. ("She teases me about the Terminator and the robot army," he told me.) They met thirteen years ago, and for all but six months they have lived on opposite sides of the Atlantic, even after the recent birth of their son. The arrangement is voluntary: she prefers Montreal; his work keeps him at Oxford. They Skype several times a day, and he directs as much international travel as possible through Canada, so they can meet in non-digital form.

In Oxford, as Bostrom shopped for his smoothie, he pointed out a man vaping. "There is also the more old-school method of taking nicotine: chewing gum," he told me. "I do chew nicotine gum. I read a few papers saying it might have some nootropic effect"—that is, it might enhance cognition. He drinks coffee, and usually abstains from alcohol. He briefly experimented with the smart drug Modafinil, but gave it up.

Back at the institute, he filled an industrial blender with lettuce, carrots, cauliflower, broccoli, blueberries, turmeric, vanilla, oat milk, and whey powder. "If there is one thing Nick cares about, it is minds," Sandberg told me. "That is at the root of many of his views about food, because he is worried that toxin X or Y might be bad for his brain." He suspects that Bostrom also enjoys the ritualistic display. "Swedes are known for their smugness," he joked. "Perhaps Nick is subsisting on smugness."

A young employee eyed Bostrom getting ready to fire up the blender. "I can tell when Nick comes into the office," he said. "My hair starts shaking."

"Yeah, this has got three horsepower," Bostrom said. He ran the blender, producing a noise like a circular saw, and then filled a tall glass stein with purple-green liquid. We headed to his office, which was meticulous. By a window was a wooden desk supporting an iMac and not another item; against a wall were a chair and a cabinet with a stack of documents. The only hint of excess was light: there were fourteen lamps.

It is hard to spend time at Bostrom's institute without drifting into reveries of a far future. What might humanity look like millions of years from now? The upper limit of survival on Earth is fixed to the life span of the sun, which in five billion years will become a red giant and swell to more than two hundred times its present size. It is possible that Earth's orbit will adjust, but more likely that the planet will be destroyed. In any case, long before then, nearly all plant life will die, the oceans will boil, and the Earth's crust will heat to a thousand degrees. In half a billion years, the planet will be uninhabitable.

The view of the future from Bostrom's office can be divided into three grand panoramas. In one, humanity experiences an evolutionary leap—either assisted by technology or by merging into it and becoming software—to achieve a sublime condition that Bostrom calls "posthumanity." Death is overcome, mental experience expands beyond recognition, and our descendants colonize the universe. In another panorama, humanity becomes extinct or experiences a disaster so great that it is unable to recover. Between these extremes, Bostrom envisions scenarios that resemble the status quo—people living as they do now, forever mired in the "human era." It's a vision familiar to fans of sci-fi: on "Star Trek," Captain Kirk was born in the year 2233, but when an alien portal hurls him through time and space to Depression-era Manhattan he blends in easily.

Bostrom dislikes science fiction. "I've never been keen on stories that just try

to present 'wow' ideas—the equivalent of movie productions that rely on stunts and explosions to hold the attention," he told me. "The question is not whether we can think of something radical or extreme but whether we can discover some sufficient reason for updating our credence function."

He believes that the future can be studied with the same meticulousness as the past, even if the conclusions are far less firm. "It may be highly unpredictable where a traveller will be one hour after the start of her journey, yet predictable that after five hours she will be at her destination," he once argued. "The *very* long-term future of humanity may be relatively easy to predict." He offers an example: if history were reset, the industrial revolution might occur at a different time, or in a different place, or perhaps not at all, with innovation instead occurring in increments over hundreds of years. In the short term, predicting technological achievements in the counter-history might not be possible; but after, say, a hundred thousand years it is easier to imagine that all the same inventions would have emerged.

Bostrom calls this the Technological Completion Conjecture: "If scientific- and technological-development efforts do not effectively cease, then all important basic capabilities that could be obtained through some possible technology will be obtained." In light of this, he suspects that the farther into the future one looks the less likely it seems that life will continue as it is. He favors the far ends of possibility: humanity becomes transcendent or it perishes.

In the nineteen-nineties, as these ideas crystallized in his thinking, Bostrom began to give more attention to the question of extinction. He did not believe that doomsday was imminent. His interest was in risk, like an insurance agent's. No matter how improbable extinction may be, Bostrom argues, its consequences are near-infinitely bad; thus, even the tiniest step toward reducing the *chance* that it will happen is near-infinitely valuable. At times, he uses arithmetical sketches to illustrate this point. Imagining one of his utopian scenarios—trillions of digital minds thriving across the cosmos—he reasons that, if there is even a one-per-cent chance of this happening, the expected value of reducing an existential threat by a billionth of a billionth of one per cent would be worth a hundred billion times the value of a billion present-day lives. Put more simply: he believes that his work could dwarf the moral importance of anything else.

Bostrom introduced the philosophical concept of "existential risk" in 2002, in the *Journal of Evolution and Technology*. In recent years, new organizations have been founded almost annually to help reduce it—among them the Centre for the Study of Existential Risk, affiliated with Cambridge University, and the Future of Life Institute, which has ties to the Massachusetts Institute of Technology. All of them face a key problem: *Homo sapiens*, since its emergence two hundred thousand years ago, has proved to be remarkably resilient, and figuring out what might imperil its existence is not obvious. Climate change is likely to cause vast environmental and economic damage—but it does not seem impossible to survive. So-called super-volcanoes have thus far not threatened the perpetuation of the species. NASA spends forty million dollars each year to determine if there are significant comets or asteroids headed for Earth. (There aren't.)

Bostrom does not find the lack of obvious existential threats comforting. Because it is impossible to endure extinction twice, he argues, we cannot rely on history to calculate the probability that it will occur. The most worrying dangers are those that Earth has never encountered before. "It is hard to cause human extinction with seventeenth-century technology," Bostrom told me. Three centuries later, though, the prospect of a technological apocalypse was urgently plausible. Bostrom dates the first scientific analysis of existential risk to the Manhattan Project: in 1942, Robert Oppenheimer became concerned that an atomic detonation of sufficient power could cause the entire atmosphere to ignite. A subsequent study concluded that the scenario was "unreasonable," given the limitations of the weapons then in development. But even if the great nuclear nightmares of the Cold War did not come true, the tools were there to cause destruction on a scale not previously possible. As innovations grow even more complex, it is increasingly difficult to evaluate the dangers ahead. The answers must be fraught with ambiguity, because they can be derived only by predicting the effects of technologies that exist mostly as theories or, even more indirectly, by using abstract reasoning.

As a philosopher, Bostrom takes a sweeping, even cosmic, view of such problems. One afternoon, he told me, "The probabilities that any given planet will produce intelligent life—this may also have action-relevant information." In the past several years, NASA probes have found increasing evidence that the building blocks of life are abundant throughout space. So much water has been discovered—on Mars and on the moons of Jupiter and Saturn—that one scientist described our solar system as "a pretty soggy place." There are amino acids on icy comets and complex organic molecules in distant star-forming clouds. On this planet, life has proved capable of thriving in unimaginably punishing conditions: without oxygen, without light, at four hundred degrees above or below zero. In 2007, the European Space Agency hitched tiny creatures to the exterior of a satellite. They not only survived the flight; some even laid eggs afterward.

With ten billion Earth-like planets in our galaxy alone, and a hundred billion galaxies in the universe, there is good reason to suspect that extraterrestrial life may one day be discovered. For Bostrom, this would augur disaster. "It would be great news to find that Mars is a completely sterile planet," he argued not long ago. "Dead rocks and lifeless sands would lift my spirits." His reasoning begins with the age of the universe. Many of those Earth-like planets are thought to be far, far older than ours. One that was recently discovered, called Kepler 452b, is as much as one and a half billion years older. Bostrom asks: If life had formed there on a time scale resembling our own, what would it look like? What kind of technological progress could a civilization achieve with a head start of hundreds of millions of years?

Life as we know it tends to spread wherever it can, and Bostrom estimates that, if an alien civilization could design

On the fifth floor
of the medical school,
sequestered from public view,
a black slab lab table
lined with old apothecary jars and twist-top jars
sealed with paraffin wax,
a shoal of *not-fish* treading bronzy water,
each homunculus labelled
in terms of in-utero days and weeks.

In this jarscape, a palm-size one
sitting with legs crossed,
arms raised protectively,
clasping the top of his head
like a child expecting blows in a parental brawl,
and this golem, a perfect mini-person,
holds fingers curved lightly in front of him,
as if playing a piano chord,
and this *quelque chose* has blackened soles—
in the womb,
a *douen* meant to range the barefoot forest,
those faceless stillborn and early-dead children with
backward feet,
who lure human playmates to the woods
and fill their always hungry mouths with little crabs.

All casualties are clipped
with yellowed plastic navel clamps
that look like bones.

Here are twins, one larger than the other,
one malformed
with hydrocephalitic-fissured face,
and this one's wrinkly forehead,
the face of a worried eighty-year-old concentrating
on his death, an extra epaulette flap on his shoulder,
as if he is sprouting wings;
triplets like three piglets,
one with lots of hair,
one with cauliflower, puckered ear,
one with a purple-black hand reaching out of the
water,
as if in hope to be rescued from drowning.

The thirty-six-weekers are not stored in glassware.
A perfect pair, girl and boy, are on separate cookie baking
sheets,
wrapped in sterile pads, their swaddling blankets.
They are not desiccated, withered, mummified,
quick-frozen, frost-nipped, or sealed in wax.
They look like leatherette dolls in mid-kick stop-motion
animation,
as if they'd only now stopped breathing.

Girl was a low birth weight,
vagina snapped as tightly shut as the seam of a walnut.
Boy is not the color of life, a rich-colored brown boy
bleached out to plasticine-pale, dun-white.
Still, on his cheek-ear-hair, the almost-feel of life.

space probes capable of travelling at even one per cent of the speed of light, the entire Milky Way could be colonized in twenty million years—a tiny fraction of the age difference between Kepler 452b and Earth. One could argue that no technology will ever propel ships at so great a speed. Or perhaps millions of alien civilizations possess the know-how for intergalactic travel, but they aren't interested. Even so, because the universe is so colossal, and because it is so old, only a small number of civilizations would need to behave as life does on Earth—unceasingly expanding—in order to be visible. Yet, as Bostrom notes, "You start with billions and billions of potential germination points for life, and you end up with a sum total of *zero* alien civilizations that developed technologically to the point where they become manifest to us earthly observers. So what's stopping them?"

In 1950, Enrico Fermi sketched a version of this paradox during a lunch break while he was working on the H-bomb, at Los Alamos. Since then, many resolutions have been proposed—some of them exotic, such as the idea that Earth is housed in an interplanetary alien zoo. Bostrom suspects that the answer is simple: space appears to be devoid of life because it is. This implies that intelligent life on Earth is an astronomically rare accident. But, if so, when did that accident occur? Was it in the first chemical reactions in the primordial soup? Or when single-celled organisms began to replicate using DNA? Or when animals learned to use tools? Bostrom likes to think of these hurdles as Great Filters: key phases of improbability that life everywhere must pass through in order to develop into intelligent species. Those which do not make it either go extinct or fail to evolve.

Thus, for Bostrom, the discovery of a single-celled creature inhabiting a damp stretch of Martian soil would constitute a disconcerting piece of evidence. If two planets independently evolved primitive organisms, then it seems more likely that this type of life can be found on many planets throughout the universe. Bostrom reasons that this would suggest that the Great Filter comes at some later evolutionary stage. The discovery of a fossilized vertebrate would be even worse: it would suggest that the universe appears lifeless not because complex life is unusual but, rather, because it is always somehow thwarted before it becomes advanced enough to colonize space.

In Bostrom's view, the most distressing possibility is that the Great Filter is ahead of us—that evolution frequently achieves civilizations like our own, but they perish before reaching their technological maturity. Why might that be? "Natural disasters such as asteroid hits and super-volcanic eruptions

The abdomen is caved in,
and the testicles are paper-thin, black, crumpled leaves.

Some in the jars were named and tagged on the wrist.
I was told that I cannot tell you the names.
It is a secret between the women
and these medical anomalies.
One is named for a hurricane.

The *restos muertos* have closed eyes and African features.
They were not colorfast,
so the chemicals have bleached them to albino.
The women, who came with gravid uterus to Puerto Rico
from the Virgin Islands, seeking to save or end
pregnancies,
do not know that these small ones are still here
curled in their womb poses,
each blanched
in its lit-glass aquarium,
lolling in solvent tinted the color of beer, brandy, honey,
oil, or perfume.

These small floating gods in primer paint, never to be
besprinkled
with blessed water to help them cross over,
never to evaporate, dust-scatter, or waste—they are here
and not here!
What is the shelf-life of the unborn?

In the Caribbean, women must travel
from island to island
to get needed health care,
and so these doodads
were not carried home but donated,
no one knows how long ago.

I have been invited here by a doctor who loves the arts,
and whom I like.
I was told beforehand only that I would be viewing
human tissue.
He proposes collaboration, an artistic public exhibition
of these impossible children,
who will never utter "peacock,"
" butterfly,"
"confetti," "crazy quilt," "cashmere," or "soap."

Skullduggery.
Monster Midway. Gaff joints. Shell games. Sideshow
piebald children.
Human oddities and the science of teratology.

At home, I whisper to the midnight page,
Women of the Virgin Islands, *Sistren,*
I saw them, and they are okay.
Your small ones are still on the Earth!

— *Loretta Collins Klobah*

are unlikely Great Filter candidates, because, even if they destroyed a significant number of civilizations, we would expect some civilizations to get lucky and escape disaster," he argues. "Perhaps the most likely type of existential risks that could constitute a Great Filter are those that arise from technological discovery. It is not far-fetched to suppose that there might be some possible technology which is such that (a) virtually all sufficiently advanced civilizations eventually discover it and (b) its discovery leads almost universally to existential disaster."

II. THE MACHINES

The field of artificial intelligence was born in a fit of scientific optimism, in 1955, when a small group of researchers—three mathematicians and an I.B.M. programmer—drew up a proposal for a project at Dartmouth. "An attempt will be made to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves," they stated. "We think a significant advance can be made in one or more of these problems if a carefully selected group of scientists work on it together for a summer."

Their optimism was understandable. Since the turn of the twentieth century, science had been advancing at a breakneck pace: the discovery of radioactivity quickly led to insights into the inner workings of the atom, and then to the development of controlled nuclear energy, and then to the warheads over Hiroshima and Nagasaki, and then to the H-bomb. This rush of discovery was reflected in fiction, too, in the work of Isaac Asimov, among others, who envisioned advanced civilizations inhabited by intelligent robots (each encoded with simple, ethical Laws of Robotics, to prevent it from causing harm). The year the scientists met at Dartmouth, Asimov published "The Last Question," a story featuring a superintelligent A.I. that is continually "self-adjusting and self-correcting"—gaining knowledge as it helps human civilization expand throughout the universe. When the universe's last stars start dying out, all humanity uploads itself into the A.I., and the device, achieving godhood, creates a new cosmos.

Scientists perceived the mechanics of intelligence—like those of the atom—as a source of huge potential, a great frontier. If the brain was merely a biological machine, there was no theoretical reason that it could not be replicated, or even surpassed, much the way a jet could outfly a falcon. Even before the Dartmouth conference, machines exceeded human ability in narrow domains like code-breaking. In 1951, Alan Turing argued that at some point computers

"No, you want the A train. This is just a train."

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would probably exceed the intellectual capacity of their inventors, and that "therefore we should have to expect the machines to take control." Whether this would be good or bad he did not say.

Six years later, Herbert Simon, one of the Dartmouth attendees, declared that machines would achieve human intelligence "in a visible future." The crossing of such a threshold, he suspected, could be psychologically crushing, but he was on the whole optimistic. "We must also remain sensitive to the need to keep the computer's goals attuned with our own," he later said, but added, "I am not convinced that this will be difficult." For other computer pioneers, the future appeared more ambivalent. Norbert Wiener, the father of cybernetics, argued that it would be difficult to manage powerful computers, or even to accurately predict their behavior. "Complete subservience and complete intelligence do not go together," he said. Envisioning Sorcerer's Apprentice scenarios, he predicted, "The future will be an ever more demanding struggle against the limitations of our intelligence, not a comfortable hammock in which we can lie down to be waited upon by our robot slaves."

It was in this milieu that the "intelligence explosion" idea was first formally expressed by I. J. Good, a statistician who had worked with Turing. "An ultraintelligent machine could design even better machines," he wrote. "There would then unquestionably be an 'intelligence explosion,' and the intelligence of man would be left far behind. Thus the first ultraintelligent machine is the *last* invention that man need ever make, provided that the machine is docile enough to tell us how to keep it under control. It is curious that this point is made so seldom outside of science fiction. It is sometimes worthwhile to take science fiction seriously."

The scientists at Dartmouth recognized that success required answers to fundamental questions: What is intelligence? What is the mind? By 1965, the field had experimented with several models of problem solving: some were based on formal logic; some used heuristic reasoning; some, called "neural networks," were inspired by the brain. With each, the scientists' work indicated that A.I. systems could find their own solutions to problems. One algorithm proved numerous theorems in the classic text "Principia Mathematica," and in one instance it did so more elegantly than the authors. A program designed to play checkers learned to beat its programmer. And yet, despite the great promise in these experiments, the challenges to creating an A.I. were forbidding. Programs that performed well in the laboratory were useless in everyday situations; a simple act like picking up a ball turned out to require an overwhelming number of computations.

The research fell into the first of several "A.I. winters." As Bostrom notes in his book, "Among academics and their funders, 'A.I.' became an unwanted epithet." Eventually, the researchers started to question the goal of building a mind altogether. Why not try instead to divide the problem into pieces? They began to limit their interests to specific cognitive functions: vision, say, or speech. Even in isolation, these functions would have value: a computer that could identify objects might not be an A.I., but it could help guide a forklift. As the research fragmented, the morass of technical problems made any questions about the consequences of success seem distant, even silly.

Unexpectedly, by dismissing its founding goals, the field of A.I. created space for outsiders to imagine more freely what the technology might look like. Bostrom wrote his first paper on artificial superintelligence in the nineteen-nineties, envisioning it as potentially perilous but irresistible to both commerce and government. "If there is a way of guaranteeing that superior artificial intellects will never harm human beings, then such intellects will be created," he argued. "If there is no way to have such a guarantee, then they will probably be created nevertheless." His audience at the time was primarily other transhumanists. But the movement was maturing. In 2005, an organization called the Singularity Institute for Artificial Intelligence began to operate out of Silicon Valley; its primary founder, a former member of the Extropian discussion group, published a stream of literature on the dangers of A.I. That same year, the futurist and inventor Ray Kurzweil wrote "The Singularity Is Near," a best-seller that prophesied a merging of man and machine in the foreseeable future. Bostrom created his institute at Oxford.

The two communities could not have been more different. The scientists, steeped

in technical detail, were preoccupied with making devices that worked; the transhumanists, motivated by the hope of a utopian future, were asking, What would the ultimate impact of those devices be? In 2007, the Association for the Advancement of Artificial Intelligence—the most prominent professional organization for A.I. researchers—elected Eric Horvitz, a scientist from Microsoft, as its president. Until then, it had given virtually no attention to the ethical and social implications of the research, but Horvitz was open to the big questions. "It is hard to understand what success would mean for A.I.," he told me. "I was friendly with Jack Good, who wrote that piece on superintelligence. I knew him as a creative, funny guy who referred to a lot of his ideas as P.B.I.s—partly baked ideas. And here is this piece of his being opened up outside the field as this Bible and studied with a silver pointer. Wouldn't it be useful, I said, even if you thought these were crazy or low-probability scenarios, to find out: Can we be proactive, should there be some poor outcome for humanity?"

Horvitz organized a meeting at the Asilomar Conference Grounds, in California, a place chosen for its symbolic value: biologists had gathered there in 1975 to discuss the hazards of their research in the age of modern genetics. He divided the researchers into groups. One studied short-term ramifications, like the possible use of A.I. to commit crimes; another considered long-term consequences. Mostly, there was skepticism about the intelligence-explosion idea, which assumed answers to many unresolved questions. No one fully understands what intelligence is, let alone how it might evolve in a machine. Can it grow as Good imagined, gaining I.Q. points like a rocketing stock price? If so, what would its upper limit be? And would its increase be merely a function of optimized software design, without the difficult process of acquiring knowledge through experience? Can software fundamentally rewrite itself without risking crippling breakdowns? No one knows. In the history of computer science, no programmer has created code that can substantially improve itself.

But the notion of an intelligence explosion was also impossible to disprove. It was theoretically coherent, and it had even been attempted in limited ways. David McAllester, an A.I. researcher at the Toyota Technological Institute, affiliated with the University of Chicago, headed the long-term panel. The idea, he argued, was worth taking seriously. "I am uncomfortable saying that we are ninety-nine per cent certain that we are safe for fifty years," he told me. "That feels like hubris to me." The group concluded that more technical work was needed before an evaluation of the dangers could be made, but it also hinted at a concern among panelists that the gathering was based on "a *perception* of urgency"—generated largely by the transhumanists—and risked raising unfounded alarm. With A.I. seeming like a remote prospect, the researchers declared, attention was better spent on near-term concerns. Bart Selman, a professor at Cornell who co-organized the panel, told me, "The mode was 'This is interesting, but it's all academic—it's not going to happen.'"

At the time the A.I researchers met at Asilomar, Bostrom was grappling with an expansive book on existential risks. He had sketched out chapters on bioengineering and on nanotechnology, among other topics, but many of these problems came to seem less compelling, while his chapter on A.I. grew and grew. Eventually, he pasted the A.I. chapter into a new file, which became "Superintelligence."

The book is its own elegant paradox: analytical in tone and often lucidly argued, yet punctuated by moments of messianic urgency. Some portions are so extravagantly speculative that it is hard to take them seriously. ("Suppose we could somehow establish that a certain future AI will have an IQ of 6,455: then what?") But Bostrom is aware of the limits to his type of futurology. When he was a graduate student in London, thinking about how to maximize his ability to communicate, he pursued stand-up comedy; he has a deadpan sense of humor, which can be found lightly buried among the book's self-serious passages. "Many of the points made in this book are probably wrong," he writes, with an endnote that leads to the line "I don't know which ones."

Bostrom prefers to act as a cartographer rather than a polemicist, but beneath his exhaustive mapping of scenarios one can sense an argument being built and perhaps a fear of being forthright about it. "Traditionally, this topic domain has been occupied by cranks," he told me. "By popular media, by science

"Chaucer on lyne thrie."

fiction—or maybe by a retired physicist no longer able to do serious work, so he will write a popular book and pontificate. That is kind of the level of rigor that is the baseline. I think that a lot of reasons why there has not been more serious work in this area is that academics don't want to be conflated with flaky, crackpot type of things. Futurists are a certain type."

The book begins with an "unfinished" fable about a flock of sparrows that decide to raise an owl to protect and advise them. They go looking for an owl egg to steal and bring back to their tree, but, because they believe their search will be so difficult, they postpone studying how to domesticate owls until they succeed. Bostrom concludes, "It is not known how the story ends."

The parable is his way of introducing the book's core question: Will an A.I., if realized, use its vast capability in a way that is beyond human control? One way to think about the concern is to begin with the familiar. Bostrom writes, "Artificial intelligence already outperforms human intelligence in many domains." The examples range from chess to Scrabble. One program from 1981, called Eurisko, was designed to teach itself a naval role-playing game. After playing ten thousand matches, it arrived at a morally grotesque strategy: to field thousands of small, immobile ships, the vast majority of which were intended as cannon fodder. In a national tournament, Eurisko demolished its human opponents, who insisted that the game's rules be changed. The following year, Eurisko won again—by forcing its damaged ships to sink themselves.

The program was by no means superintelligent. But Bostrom's book essentially asks: What if it were? Assume that it has a broad ability to consider problems and that it has access to the Internet. It could read and acquire general knowledge and communicate with people seamlessly online. It could conduct experiments, either virtually or by tinkering with networked infrastructure. Given even the most benign objective—to win a game—such a system, Bostrom argues, might develop "instrumental goals": gather resources, or invent technology, or take steps to insure that it cannot be turned off, in the process paying as much heed to human life as humans do to ants.

In people, intelligence is inseparable from consciousness, emotional and social awareness, the complex interaction of mind and body. An A.I. need not have any such attributes. Bostrom believes that machine intelligences—no matter how flexible in their tactics—will likely be rigidly fixated on their ultimate goals. How, then, to create a machine that respects the nuances of social cues? That adheres to ethical norms, even at the expense of its goals? No one has a coherent solution. It is hard enough to reliably inculcate such behavior in people.

In science fiction, superintelligent computers that run amok are often circumvented at the last minute; think of WOPR, the computer in "WarGames," which was stopped just short of triggering nuclear war, or HAL 9000, which was reduced to helplessly singing while it watched itself get dismantled. For Bostrom, this strains credulity. Whether out of a desire to consider the far ends of risk or out of transhumanist longings, he often ascribes nearly divine abilities to machines, as if to ask: Can a digital god really be contained? He imagines machines so intelligent that merely by inspecting their own code they can extrapolate the nature of the universe and of human society, and in this way outsmart any effort to contain them. "Is it

possible to build machines that are not like agents—goal-pursuing, autonomous, artificial intelligences?" he asked me. "Maybe you can design something more like an oracle that can only answer yes or no. Would that be safer? It is not so clear. There might be agent-like processes within it." Asking a simple question—"Is it possible to convert a DeLorean into a time machine and travel to 1955?"—might trigger a cascade of action as the device tests hypotheses. What if, working through a police computer, it impounds a DeLorean that happens to be convenient to a clock tower? "In fairy tales, you have genies who grant wishes," Bostrom said. "Almost universally, the moral of those is that if you are not extremely careful what you wish for, then what seems like it should be a great blessing turns out to be a curse."

Bostrom worries that solving the "control problem"—insuring that a superintelligent machine does what humans want it to do—will require more time than solving A.I. does. The intelligence explosion is not the only way that a superintelligence might be created suddenly. Bostrom once sketched out a decades-long process, in which researchers arduously improved their systems to equal the intelligence of a mouse, then a chimp, then—after incredible labor—the village idiot. "The difference between village idiot and genius-level intelligence might be trivial from the point of view of how hard it is to replicate the same functionality in a machine," he said. "The brain of the village idiot and the brain of a scientific genius are almost identical. So we might very well see relatively slow and incremental progress that doesn't really raise any alarm bells until we are just one step away from something that is radically superintelligent."

To a large degree, Bostrom's concerns turn on a simple question of timing: Can breakthroughs be predicted? "It is ridiculous to talk about such things so early—A.I. is eons away," Edward Feigenbaum, an emeritus professor at Stanford University, told me. The researcher Oren Etzioni, who used the term "Frankenstein complex" to dismiss the "dystopian vision of A.I.," concedes Bostrom's overarching point: that the field must one day confront profound philosophical questions. Decades ago, he explored them himself, in a brief paper, but concluded that the problem was too remote to think about productively. "Once, Nick Bostrom gave a talk, and I gave a little counterpoint," he told me. "A lot of the disagreements come down to what time scale you are thinking about. Nobody responsible would say you will see anything remotely like A.I. in the next five to ten years. And I think most computer scientists would

say, 'In a million years—we don't see why it shouldn't happen.' So now the question is: What is the rate of progress? There are a lot of people who will ask: Is it *possible* we are wrong? Yes. I am not going to rule it out. I am going to say, 'I am a scientist. Show me the evidence.'"

The history of science is an uneven guide to the question: How close are we? There has been no shortage of unfulfilled promises. But there are also plenty of examples of startling near-sightedness, a pattern that Arthur C. Clarke enshrined as Clarke's First Law: "When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong." After the electron was discovered, at Cambridge, in 1897, physicists at an annual dinner toasted, "To the electron: may it never be of use to anybody." Lord Kelvin famously declared, just eight years before the Wright brothers launched from Kitty Hawk, that heavier-than-air flight was impossible.

Stuart Russell, the co-author of the textbook "Artificial Intelligence: A Modern Approach" and one of Bostrom's most vocal supporters in A.I., told me that he had been studying the physics community during the advent of nuclear weapons. At the turn of the twentieth century, Ernest Rutherford discovered that heavy elements produced radiation by atomic decay, confirming that vast reservoirs of energy were stored in the atom. Rutherford believed that the energy could not be harnessed, and in 1933 he proclaimed, "Anyone who expects a source of power from the transformation of these atoms is talking moonshine." The next day, a former student of Einstein's named Leo Szilard read the comment in the papers. Irritated, he took a walk, and the idea of a nuclear chain reaction occurred to him. He visited Rutherford to discuss it, but Rutherford threw him out. Einstein, too, was skeptical about nuclear energy—splitting atoms at will, he said, was "like shooting birds in the dark in a country where there are only a few birds." A decade later, Szilard's insight was used to build the bomb.

Russell now relays the story to A.I. researchers as a cautionary tale. "There will have to be more breakthroughs to get to A.I., but, as Szilard illustrated, those can happen overnight," he told me. "People are putting billions of dollars into achieving those breakthroughs. As the debate stands, Bostrom and others have said, 'If we achieve superintelligence, here are some of the problems that might arise.' As far as I know, no one has proved why those are not real."

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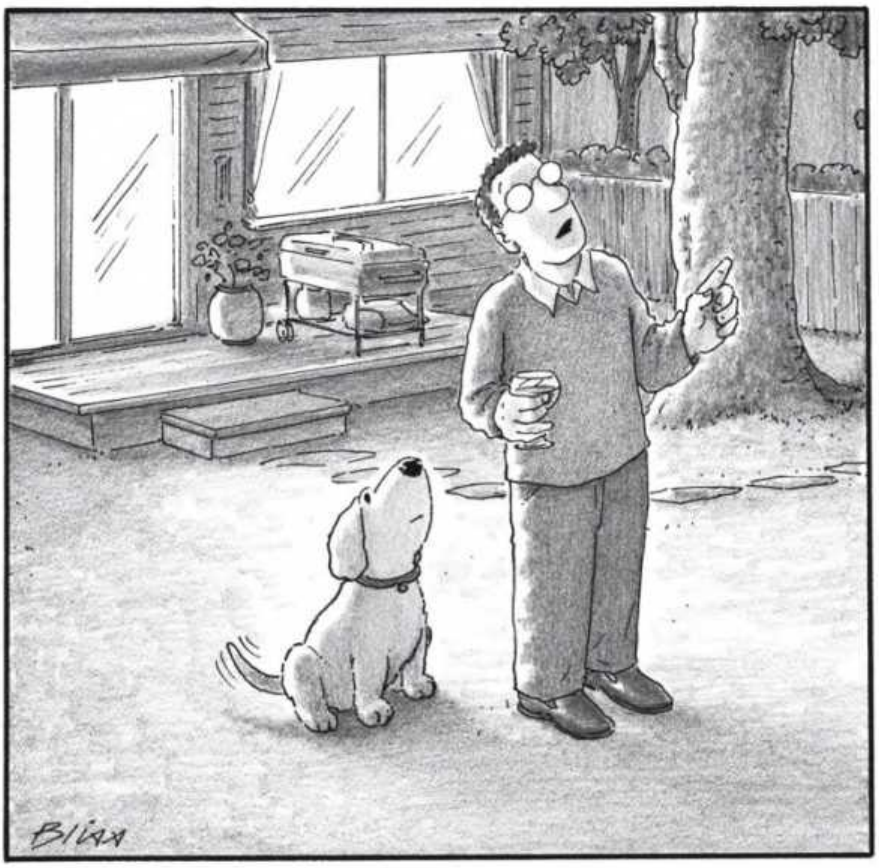
III. MISSION CONTROL

The offices of the Future of Humanity Institute have a hybrid atmosphere: part physics lab, part college dorm room. There are whiteboards covered with mathematical notation and technical glyphs; there are posters of "Brave New World" and HAL 9000. There is also art work by Nick Bostrom. One afternoon, he guided me to one of his pieces, "At Sea," a digital collage that he had printed out and then drawn on. "It is a bit damaged, but the good thing about digital is that you can re-instantiate it," he said. At the center was a pale man, nearly an apparition, clinging to a barrel in an inky-black ocean. "It is an existentialist vibe. You are hanging on for as long as you can. When you get tired, you sink, and become fish food—or maybe a current will take him to land. We don't know."

Despite the time he spends going to conferences and raising money, Bostrom attends to many details at the institute. "We needed a logo when we started," he told me. "We went to this online site where you could buy the work of freelance artists. If you sat down and tried to make the ugliest logo, you couldn't come close. Then we hired a designer, who made a blurry figure of a person. We showed it to someone here, who said it looked like a toilet sign. As soon as she said it, I thought, Oh, my God, we almost adopted a toilet sign as our logo. So I mucked around a bit and came up with a black diamond. You have the black monolith from '2001.' Standing on its corner, it indicates instability. Also, there is a limit to how ugly a black square can be."

The institute shares office space with the Centre for Effective Altruism, and both organizations intersect with a social movement that promotes pure rationality as a guide to moral action. Toby Ord, a philosopher who works with both, told me that Bostrom often pops into his office at the end of the day, poses a problem, then leaves him pondering it for the night. Among the first of Bostrom's questions was this: If the universe turns out to contain an infinite number of beings, then how could any single person's action affect the cosmic balance of suffering and happiness? After lengthy



"O.K., there's the moon—now give me a nice long howl instead of last night's yip."

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discussions, they left the paradox unresolved. "My main thinking is that we can sort it out later," Ord told me.

When I asked Bostrom if I could observe a discussion at the institute, he seemed reluctant; it was hard to judge whether he was concerned that my presence would interfere or that unfiltered talk of, say, engineered pathogens might inspire criminals. ("At some point, one gets into the realm of information hazard," he hinted.) Eventually, he let me observe a session in the Petrov Room involving half a dozen staff members. The key question under discussion was whether a global catastrophe, on the order of a continent-wide famine, could trigger a series of geopolitical events that would result in human extinction—and whether that meant that a merely catastrophic risk could therefore be taken as seriously as an existential risk. Bostrom, wearing a gray hoodie over a blue button-down, organized the problem on a whiteboard with visible pleasure. Anders Sandberg told me that he once spent days with Bostrom working through such a problem, distilling a complex argument to its essence. "He had to *refine* it," he said. "We had a lot of schemes on the whiteboard that gradually were simplified to one box and three arrows."

For anyone in the business of publicizing existential risk, 2015 began as a good year. Other institutes devoted to these issues had started to find their voice, bringing an additional gloss of respectability to the ideas in Bostrom's book. The people weighing in now were no longer just former Extropians. They were credentialled, like Lord Martin Rees, an astrophysicist and the co-founder of Cambridge's Centre for the Study of Existential Risk. In January, he wrote of A.I., in the *Evening Standard*, "We don't know where the boundary lies between what may happen and what will remain science fiction."

Rees's counterpart at the Future of Life Institute, the M.I.T. physicist Max Tegmark, hosted a closed-door meeting in Puerto Rico, to try to make sense of the long-term trajectory of the research. Bostrom flew down, joining a mix of A.I. practitioners, legal scholars, and, for lack of a better term, members of the "A.I. safety" community. "These are not people who are usually in the same room," Tegmark told me. "Someone advised me to put Valium in people's drinks so nobody got into fistfights. But, by the time Nick's session started, people were ready to listen to each other." Questions that had seemed fanciful to researchers only seven years earlier were beginning to look as though they might be worth reconsidering. Whereas the Asilomar meeting concluded on a note of skepticism about the validity of the whole endeavor, the Puerto Rico conference resulted in an open letter, signed by many prominent researchers, that called for more research to insure that A.I. would be "robust and beneficial."

Between the two conferences, the field had experienced a revolution, built on an approach called deep learning—a type of neural network that can discern complex patterns in huge quantities of data. For decades, researchers, hampered by the limits of their hardware, struggled to get the technique to work well. But, beginning in 2010, the increasing availability of Big Data and cheap, powerful video-game processors had a dramatic effect on performance. Without any profound theoretical breakthrough, deep learning suddenly offered breathtaking advances. "I have been talking to quite a few contemporaries," Stuart Russell told me. "Pretty much everyone sees examples of progress they just didn't expect." He cited a YouTube clip of a four-legged robot: one of its designers tries to kick it over, but it quickly regains its balance, scrambling with uncanny naturalness. "A problem that had been viewed as very difficult, where progress was slow and incremental, was all of a sudden done. Locomotion: done."

In an array of fields—speech processing, face recognition, language translation—the approach was ascendant. Researchers working on computer vision had spent years to get systems to identify objects. In almost no time, the deep-learning networks crushed their records. In one common test, using a database called ImageNet, humans identify photographs

with a five-per-cent error rate; Google's network operates at 4.8 per cent. A.I. systems can differentiate a Pembroke Welsh Corgi from a Cardigan Welsh Corgi.

Last October, Tomaso Poggio, an M.I.T. researcher, gave a skeptical interview. "The ability to describe the content of an image would be one of the most intellectually challenging things of all for a machine to do," he said. "We will need another cycle of basic research to solve this kind of question." The cycle, he predicted, would take at least twenty years. A month later, Google announced that its deep-learning network could analyze an image and offer a caption of what it saw: "Two pizzas sitting on top of a stove top," or "People shopping at an outdoor market." When I asked Poggio about the results, he dismissed them as automatic associations between objects and language; the system did not *understand* what it saw. "Maybe human intelligence is the same thing, in which case I am wrong, or not, in which case I was right," he told me. "How do you decide?"

A respected minority of A.I. researchers began to wonder: If increasingly powerful hardware could facilitate the deep-learning revolution, would it make other long-shelved A.I. principles viable? "Suppose the brain is just a million different evolutionarily developed hacks: one for smell, one for recognizing faces, one for how you recognize animals," Tom Mitchell, who holds a chair in machine learning at Carnegie Mellon, told me. "If that is what underlies intelligence, then I think we are far, far from getting there—because we don't have many of those hacks. On the other hand, suppose that what underlies intelligence are twenty-three general mechanisms, and when you put them together you get synergy, and it works. We now have systems that can do a pretty good job with computer vision—and it turns out that we didn't have to construct a million hacks. So part of the uncertainty is: if we do not need a million different hacks, then will we find the right twenty-three fundamental generic methods?" He paused. "I no longer have the feeling, which I had twenty-five years ago, that there are gaping holes. I know we don't have a good architecture to assemble the ideas, but it is not obvious to me that we are missing components."

Bostrom noticed the shift in attitude. He recently conducted a poll of A.I. researchers to gauge their sense of progress, and in Puerto Rico a survey gathered opinions on how long it would be until an artificial intelligence could reason indistinguishably from a human being. Like Bostrom, the engineers are often careful to express their views as probabilities, rather than as facts. Richard Sutton, a Canadian computer scientist whose work has earned tens of thousands of scholarly citations, gives a range of outcomes: there is a ten-per-cent chance that A.I. will never be achieved, but a twenty-five-per-cent chance that it will arrive by 2030. The median response in Bostrom's poll gives a fifty-fifty chance that human-level A.I. would be attained by 2050. These surveys are unscientific, but he is confident enough to offer an interpretive assumption: "It is not a ridiculous prospect to take seriously the possibility that it can happen in the lifetime of people alive today."

On my last day in Oxford, I walked with Bostrom across town. He was racing to catch a train to London, to speak at the Royal Society, one of the world's oldest scientific institutions. His spirits were high. The gulf between the transhumanists and the scientific

community was slowly shrinking. Elon Musk had pledged ten million dollars in grants for academics seeking to investigate A.I. safety, and, rather than mock him, researchers applied for the money; Bostrom's institute was helping to evaluate the proposals. "Right now, there is a lot of interest," he told me. "But then there were all these long years when nobody else seemed to pay attention at all. I am not sure which is the less abnormal condition."

There were clear limits to that interest. To publicly stake out a position in the middle of the debate was difficult, not least because of the polarized atmosphere Bostrom's book had helped to create. Even though a growing number of researchers were beginning to suspect that profound questions loomed, and that they might be worth addressing now, it did not mean that they believed A.I. would lead inevitably to an existential demise or a techno-utopia. Most of them were engaged with more immediate problems: privacy, unemployment, weaponry, driverless cars running amok. When I asked Bostrom about this pragmatic ethical awakening, he reacted with dismay. "My fear is that it would swallow up the concerns for the longer term," he said. "On the other hand, yes, maybe it is useful to build bridges to these different communities. Kind of makes the issue part of a larger continuum of things to work on."

At the Royal Society, Bostrom took a seat at the back of a large hall. As he crossed his legs, I noticed a thin leather band around his ankle. A metal buckle was engraved with contact information for Alcor, a cryonics facility in Arizona, where Bostrom is a fee-paying member. Within hours of his death, Alcor will take custody of his body and maintain it in a giant steel bottle flooded with liquid nitrogen, in the hope that one day technology will allow him to be revived, or to have his mind uploaded into a computer. When he signed up, two other colleagues at the institute joined him. "My background is transhumanism," he once reminded me. "The character of that is gung-ho techno-cheerleading, bring it on now, where are my life-extension pills."

The hall was packed with some of the most technically sophisticated researchers in A.I.—not necessarily Bostrom's people—and when he spoke he began by trying to assure them that his concern was not out of Luddism. "It would be tragic if machine intelligence were never developed to its full capacity," he said. "I think this is ultimately the key, or the portal, we have to pass through to realize the full dimension of humanity's long-term potential." But, even as he avoided talk of existential risk, he pressed his audience to consider the

danger of building an A.I. without regarding its ethical design.

An attendee raised his hand to object. "We can't control basic computer worms," he said. "The A.I. that will happen is going to be a highly adaptive, emergent capability, and highly distributed. We will be able to work with it—*for* it—not necessarily contain it."

"I guess I am a little frustrated," Bostrom responded. "People tend to fall into two camps. On one hand, there are those, like yourself, who think it is probably hopeless. The other camp thinks it is easy enough that it will be solved automatically. And both of these have in common the implication that we don't have to make any effort now."

For the rest of the day, engineers presented their work at the lectern, each promising a glimpse of the future—robot vision, quantum computers, algorithms called "thought vectors." Early in Bostrom's career, he predicted that cascading economic demand for an A.I. would build up across the fields of medicine, entertainment, finance, and defense. As the technology became useful, that demand would only grow. "If you make a one-per-cent improvement to something—say, an algorithm that recommends books on Amazon—there is a lot of value there," Bostrom told me. "Once every improvement potentially has enormous economic benefit, that promotes effort to make more improvements."

Many of the world's largest tech companies are now locked in an A.I. arms race, purchasing other companies and opening specialized units to advance the technology. Industry is vacuuming up Ph.D.s so quickly that people in the field worry there will no longer be top talent in academia. After decades of pursuing narrow forms of A.I., researchers are seeking to integrate them into systems that resemble a general intellect. Since I.B.M.'s Watson won "Jeopardy," the company has committed more than a billion dollars to develop it, and is reorienting its business around "cognitive systems." One senior I.B.M. executive declared, "The separation between human and machine is going to blur in a very fundamental way."

At the Royal Society, a contingent of researchers from Google occupied a privileged place; they likely had more resources at their disposal than anyone else in the room. Early on, Google's founders, Larry Page and Sergey Brin, understood that the company's mission required solving fundamental A.I. problems. Page has said that he believes the ideal system would understand questions, even anticipate them, and produce responses in conversational language. Google scientists often invoke the computer in "Star Trek" as a model.

In recent years, Google has purchased seven robotics companies and several firms specializing in machine intelligence; it may now employ the world's largest contingent of Ph.D.s in deep learning. Perhaps the most interesting acquisition is a British company called DeepMind, started in 2011 to build a general artificial intelligence. Its founders had made an early bet on deep learning, and sought to combine it with other A.I. mechanisms in a cohesive architecture. In 2013, they published the results of a test in which their system played seven classic Atari games, with no instruction other than to improve its score. For many people in A.I., the importance of the results was immediately evident. I.B.M.'s chess program had defeated Garry Kasparov, but it could not beat a three-year-old at tic-tac-toe. In six games, DeepMind's system outperformed all previous algorithms; in three it was superhuman. In a boxing game, it learned to pin down its opponent and subdue him with a barrage of punches.

Weeks after the results were released, Google bought the company, reportedly for half a billion dollars. DeepMind placed two unusual conditions on the deal: its work could never be used for espionage or defense purposes, and an ethics board would oversee the research as it drew closer to achieving A.I. Anders Sandberg had told me, "We are happy that they are among the most likely to do it. They recognize there are some problems."

DeepMind's chief founder, Demis Hassabis, described his company to the audience at the Royal Society as an "Apollo Program" with a two-part mission: "Step one, solve intelligence. Step two, use it to solve everything else." Since the test in 2013, his system had aced more than a dozen other Atari titles. Hassabis demonstrated an unpublished trial using a three-dimensional driving game, in which it had quickly outperformed the game's automated drivers. The plan was to test it in increasingly complex virtual environments and, eventually, in the real world. The patent lists a range of uses, from finance to robotics.

Hassabis was clear about the challenges. DeepMind's system still fails hopelessly at tasks that require long-range planning, knowledge about the world, or the ability to defer rewards—things that a five-year-old child might be expected to handle. The company is working to give the algorithm conceptual understanding and the capability of transfer learning, which allows humans to apply lessons from one situation to another. These are not easy problems. But DeepMind has more than a hundred Ph.D.s to work on them, and the rewards could be immense. Hassabis spoke of building artificial scientists to resolve climate change, disease, poverty. "Even with the smartest set of humans on the planet working on these problems, these systems might be so complex that it is difficult for individual humans, scientific experts," he said. "If we can crack what intelligence is, then we can use it to help us solve all these other problems." He, too, believes that A.I. is a gateway to expanded human potential.

The keynote speaker at the Royal Society was another Google employee: Geoffrey Hinton, who for decades has been a central figure in developing deep learning. As the conference wound down, I spotted him chatting with Bostrom in the middle of a scrum of researchers. Hinton was saying that he did not expect A.I. to be achieved for decades. "No sooner than 2070," he said. "I am in the camp that is hopeless."

"In that you think it will not be a cause for good?" Bostrom asked.

"I think political systems will use it to terrorize people," Hinton said. Already, he believed, agencies like the N.S.A. were attempting to abuse similar technology.

"Then why are you doing the research?" Bostrom asked.

"I could give you the usual arguments," Hinton said. "But the truth is that the prospect of discovery is too *sweet*." He smiled awkwardly, the word hanging in the air—an echo of Oppenheimer, who famously said of the bomb, "When you

see something that is technically sweet, you go ahead and do it, and you argue about what to do about it only after you have had your technical success."

As the scientists retreated to tables set up for refreshments, I asked Hinton if he believed an A.I. could be controlled. "That is like asking if a child can control his parents," he said. "It can happen with a baby and a mother—there is biological hardwiring—but there is not a good track record of less intelligent things controlling things of greater intelligence." He looked as if he might elaborate. Then a scientist called out, "Let's all get drinks!"

"I'm bringing on Josh here for when we take over fantasy sports betting."

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Bostrom had little interest in the cocktail party. He shook a few hands, then headed for St. James's Park, a public garden that extends from the gates of Buckingham Palace through central London. The world appeared in splendorous analog: sunlight over trees, duck ponds, children and grandparents feeding birds. The spot had been a park for hundreds of years, and the vista seemed timeless. Yet, during the past millennium, the grounds had also been a marsh, a leper hospital, a deer sanctuary, and royal gardens. It seemed plausible that, a thousand years from now, digital posthumans, regarding it as wasted space, would tear it up, replace the landscaping with computer banks, and erect a vast virtual idyll.

Bostrom's pace settled into its natural quickness as we circled the park. He talked about his family; he would be seeing his wife and son soon. He was reading widely: history, psychology, economics. He was learning to code. He was thinking about expanding his institute. Although he did not know it then, F.H.I. was about to receive one and a half million dollars from Elon Musk, to create a unit that would craft social policies informed by some of Bostrom's theories. He would need to hire people. He was also giving thought to the framing of his message. "A lot more is said about the risks than the upsides, but that is not necessarily because the upside is not there," he told me. "There is just more to be said about the risk—and maybe more use in describing the pitfalls, so we know how to steer around them—than spending time now figuring out the details of how we are going to furnish the great palace a thousand years from now."

We passed a fountain, near a cluster of rocks engineered to give ducks a resting place. Bostrom, in his forties, must soon contend with physical decline, and he spoke with annoyance of the first glimmers of mortality. Even though he is an Alcor member, there is no guarantee that cryonics will work. Perhaps the most radical of his visions is that superintelligent A.I. will hasten the uploading of minds—what he calls "whole-brain emulations"—technology that might not be possible for centuries, if at all. Bostrom, in his most hopeful mode, imagines emulations not only as reproductions of the original intellect "with memory and personality intact"—a soul in the machine—but as minds expandable in countless ways. "We live for seven decades, and we have three-pound lumps of cheesy matter to think with, but to me it is plausible that there could be extremely valuable mental states outside this little particular set of possibilities that might be much better," he told me.

In his book, Bostrom considers a distant future in which trillions of digital minds merge into an enormous cognitive cyber-soup. "Whether the set of extremely positive posthuman modes of being would include some kind of dissolved bullion, there is some uncertainty," he said. "If you look at religious views, there are many where merging with something greater is a form of heaven, being in the presence of this enormous beauty and goodness. In many traditions, the best possible state does not involve being a little individual pursuing goals. But it is hard to get a grasp of what would be going on in that soup. Maybe some soups would not be preferable as a long-term outcome. I don't know." He stopped and looked ahead. "What I want to avoid is to think from our parochial 2015 view—from my own limited life experience, my own limited brain—and super-confidentially postulate what is the best form for civilization a billion years from now, when you could have brains the size of planets and billion-year life spans. It seems unlikely that we will figure out some detailed blueprint for utopia. What if the great apes had asked whether they should evolve into *Homo sapiens*—pros and cons—and they had listed, on the pro side, 'Oh, we could have a lot of bananas if we became human'? Well, we can have unlimited bananas now, but there is more to the human condition than that." ♦

NEWYORKER.COM
Nick Bostrom on whether we will engineer our own extinction.

DEPT. OF TECHNOLOGY

UNFOLLOW

How a prized daughter of the Westboro Baptist Church came to question its beliefs.

BY ADRIAN CHEN

On December 1, 2009, to commemorate World AIDS Day, Twitter announced a promotion: if users employed the hashtag #red, their tweets would appear highlighted in red. Megan Phelps-Roper, a twenty-three-year-old legal assistant, seized the opportunity. "Thank God for AIDS!" she tweeted that morning. "You won't repent of your rebellion that brought His wrath on you in this incurable scourge, so expect more & worse! #red."

As a member of the Westboro Baptist Church, in Topeka, Kansas, Phelps-Roper believed that AIDS was a curse sent by God. She believed that all manner of other tragedies—war, natural disaster, mass shootings—were warnings from God to a doomed nation, and that it was her duty to spread the news of His righteous judgments. To protest the increasing acceptance of homosexuality in America, the Westboro Baptist Church picketed the funerals of gay men who died of AIDS and of soldiers killed in Iraq and Afghanistan. Members held signs with slogans like "GOD HATES FAGS" and "THANK GOD FOR DEAD SOLDIERS," and the outrage that their efforts attracted had turned the small church, which had fewer than a hundred members, into a global symbol of hatred.

Westboro had long used the Internet to spread its message. In 1994, the church launched a Web site, www.godhatesfags.com, and early on it had a chat room where visitors could interact with members of Westboro. As a child, Phelps-Roper spent hours there, sparring with strangers. She learned about Twitter in 2008, after reading an article about an American graduate student in Egypt who had used it to notify his friends that he had been arrested while photographing riots. She opened an account but quickly lost interest—at the time, Twitter was still used mostly by early-adopting techies—until someone e-mailed Westboro's Web site, in the summer of 2009, and asked if the church used the service. Phelps-Roper, who is tall, with voluminous curly hair and pointed features, volunteered to tweet for the congregation. Her posts could be easily monitored, since she worked at Phelps Chartered, the family law firm, beside her mother, Shirley, an attorney. Moreover, Megan was known for her mastery of the Bible and for her ability to spread Westboro's doctrine. "She had a well-sharpened tongue, so to speak," Josh Phelps, one of Megan's cousins and a former member of Westboro, told me.

In August, 2009, Phelps-Roper, under the handle @meganphelps, posted a celebratory tweet when Ted Kennedy died ("He defied God at every turn, teaching rebellion against His laws. Ted's in hell!") and a description of a picket that the church held at an American Idol concert in Kansas City ("Totally AWESOME! Tons going in & taking pics—even tho others tried to block our signs"). On September 1st, her sister Bekah e-mailed church members to explain the utility of Twitter: "Now Megan has 87 followers and more are trickling in all the time. So every time we find something else to picket, or have some new video or picture we want to post (or just something that we see on the news and want to comment about)—87 people get first-hand, gospel commentary from Megan Marie."

A couple of hours after Phelps-Roper posted her tweet on World AIDS Day, she checked her e-mail and discovered numerous automated messages notifying her of new Twitter followers. Her tweet had been discovered by the comedian Michael Ian Black, who had more than a million followers. He was surprised that a member of the Westboro Baptist Church was on Twitter at all. "I sort of thought they would be this fire-and-brimstone sort of Pentecostal anti-technology clan that would be removed from the world," he told me. He tweeted, "Sort of obsessed w/ @meganphelps. Sample tweet: 'AIDS is God's curse on you.' Let her feel your love." The director Kevin Smith and "The Office" star Rainn Wilson mocked her, as did many of their followers.

Phelps-Roper was exhilarated by the response. Since elementary school, she had given hundreds of interviews about Westboro, but the reaction on Twitter seemed more real than a quote in a newspaper. "It's not just like 'Yes, all these people are seeing it,'" she told me. "It's proof that people are seeing it and reacting to it." Phelps-Roper spent much of the morning responding to angry tweets, citing Bible passages. "I think your plan is back-firing," she taunted Black. "Your followers are just nasty haters of God! You should do something about that . . . like tell them some truth every once in a while. Like this: God hates America." That afternoon, as Phelps-Roper picketed a small business in Topeka with other Westboro members, she was still glued to her iPhone. "I did not want to be the one to let it die," she said.

By the end of the day, Phelps-Roper had more than a thousand followers. She took the incident as an encouraging sign that Westboro's message was well suited to social media. She loved that Twitter let her talk to large numbers of people without the filter of a journalist. During the next few months, Phelps-Roper spearheaded Westboro's push into the social-media age, using Twitter to offer a window into life in the church and giving it an air of accessibility.

It was easy for Phelps-Roper to write things on Twitter that made other people cringe. She had been taught the church's vision of God's truth since birth. Her grandfather Fred Phelps established the church, in 1955. Megan's mother was

It was easy for Megan Phelps-Roper to tweet things that made people cringe—she knew that they were evil or deluded by God.

PHOTOGRAPH BY KATY GRANNAN

the fifth of Phelps's thirteen children. Megan's father, Brent Roper, had joined the church as a teen-ager. Every Sunday, Megan and her ten siblings sat in Westboro's small wood-panelled church as her grandfather delivered the sermon. Fred Phelps preached a harsh Calvinist doctrine in a resounding Southern drawl. He believed that all people were born depraved, and that only a tiny elect who repented would be saved from Hell. A literalist, Phelps believed that contemporary Christianity, with its emphasis on God's love, preached a perverted version of the Bible. Phelps denounced other Christians so vehemently that when Phelps-Roper was young she thought "Christian" was another word for evil. Phelps believed that God hated unrepentant sinners. God hated the politicians who were allowing the United States to descend into a modern-day Sodom and Gomorrah. He hated the celebrities who glorified fornication.

Phelps also believed that fighting the increasing tolerance of homosexuality was the key moral issue of our time. To illustrate gay sin, he described exotic sex acts in lurid detail. "He would say things like 'These guys are slobbering around on each other and sucking on each other,'" Megan said. In awe of his conviction and deep knowledge of Scripture, she developed a revulsion to homosexuality. "We thought of him as a star in the right hand of God," she said. Westboro had started as an offshoot of Topeka's East Side Baptist Church, but by the time Phelps-Roper was born its congregation was composed mostly of Fred Phelps's adult children and their families.

Nevertheless, Phelps-Roper didn't grow up in isolation. Westboro believed that its members could best preach to the wicked by living among them. The children of Westboro attended Topeka public schools, and Phelps-Roper ran track, listened to Sublime CDs, and read Stephen King novels. If you knew the truth in your heart, Westboro believed, even the filthiest products of pop culture couldn't defile you. She was friendly with her classmates and her teachers, but viewed them with extreme suspicion—she knew that they were either intentionally evil or deluded by God. "We would always say, They have nothing to offer us," Phelps-Roper said. She never went to dances. Dating was out of the question. The Westboro students had a reputation for being diligent and polite in class, but at lunch they would picket the school, dodging food hurled at them by incensed classmates.

Phelps-Roper was constantly around family. Nine of Fred Phelps's children were still in the church, and most of them had large families of their own. Many of them worked as lawyers at Phelps Chartered. The church was in a residential neighborhood in southwest Topeka, and its members had bought most of the houses on the block around it. Their back yards were surrounded by a tall fence, creating a huge courtyard that was home to a trampoline, an in-ground pool, a playground, and a running track. They called the Westboro compound the Block, and considered it a sanctuary in a world full of evil. "We did lots of fun normal-kids stuff," Megan said.

The Phelps-Roper home was the biggest on the Block, and a room in the basement acted as a kind of community center for Westboro. An alcove in the kitchen had cubbies for the signs that were used in pickets. On summer afternoons, Shirley led Bible readings for young members. She had a central role in nearly every aspect of Westboro's operations: she was its media coördinator, planned the pickets, and managed Phelps Chartered. A parade of journalists and Westboro members sought meetings with her. Louis Theroux, a British filmmaker who made two documentaries about Westboro, said, "My feeling was that there was a pecking order and there was an unacknowledged hierarchy, and at the top of it was Shirley's family." Starting in middle school, Megan worked side by side with Shirley; among her siblings, she had a uniquely strong bond with her mother. "I felt like I could ask her anything about anything," Megan told me.

Other young Westboro members regarded Shirley with a mixture of fear and respect. "Shirley had a very abrasive personality," Josh Phelps said. But, he added, she could be remarkably tender when dispensing advice or compliments. Megan lacked Shirley's hard edge. "She was just happy in general," her cousin Libby Phelps, one of Megan's close friends, told me.

Shirley, as Westboro's de-facto spokeswoman, granted interviews to almost any outlet, no matter how obscure or adversarial. "She was smart and funny, and would answer impertinent questions and not be offended about it," Megan said. When reporters wanted the perspective of a young person, Shirley let them speak to Megan. In sixth grade, Megan gave her first live interview when she answered a call from a couple of radio d.j.s who wanted to speak to her mother. Megan recalls, "They thought it was hilarious, this eleven-year-old talking about hating Jews."

Obedience was one of the most important values that Shirley instilled in Megan. She would sum up the Bible in three words: "Obey. Obey. Obey." The smallest hint of dissent was seen as an intolerable act of rebellion against God. Megan was taught that there would always be a tension between what she felt and thought as a human and what the Bible required of her. But giving place to rebellious thoughts was the first step down the path toward Hell. "The tone of your voice or the look on your face—you could get into so much trouble for these things, because they betray what's in your heart," she said. Her parents took to heart the proverb "He that spareth his rod hateth his son." Her uncle gave them a novelty wooden paddle inscribed with the tongue-in-cheek direction "May be used on any child from 5 to 75," and her father hung it on the wall next to the family photos. The joke hit close to home for Phelps-Roper, who was spanked well into her teens. Sometimes, she told me, "it went too far, for sure." But, she added, "I also always knew that they were just trying to do what God required of them."

As she grew older, she came to find comfort, and even joy, in submitting her will to the word of God. Children in Westboro must make a profession of faith before they are baptized and become full members of the church. One day in June, when she was thirteen, her grandfather baptized her in the shallow end of the Block's pool. "I wanted to do everything right," she said. "I wanted to be good, and I wanted to be obedient, and I wanted to be the object of my parents' pride. I wanted to go to Heaven."

Westboro started picketing in June, 1991, when Phelps-Roper was five years old. Fred Phelps believed that Gage Park, less than a mile from the Block, had become overrun with gay

men cruising for sex. Phelps claimed that he was inspired to launch the Great Gage Park Decency Drive, as he called it, after one of his young grandsons was propositioned while biking through the park. The church sought redress from city officials, to no avail, so throughout the summer church members, including Megan, protested every day, walking in a circle while holding signs with messages written in permanent marker such as "WARNING! GAYS IN THE BUSHES! WATCH YOUR CHILDREN!" and "AND GOD OVER-THREW SODOM."

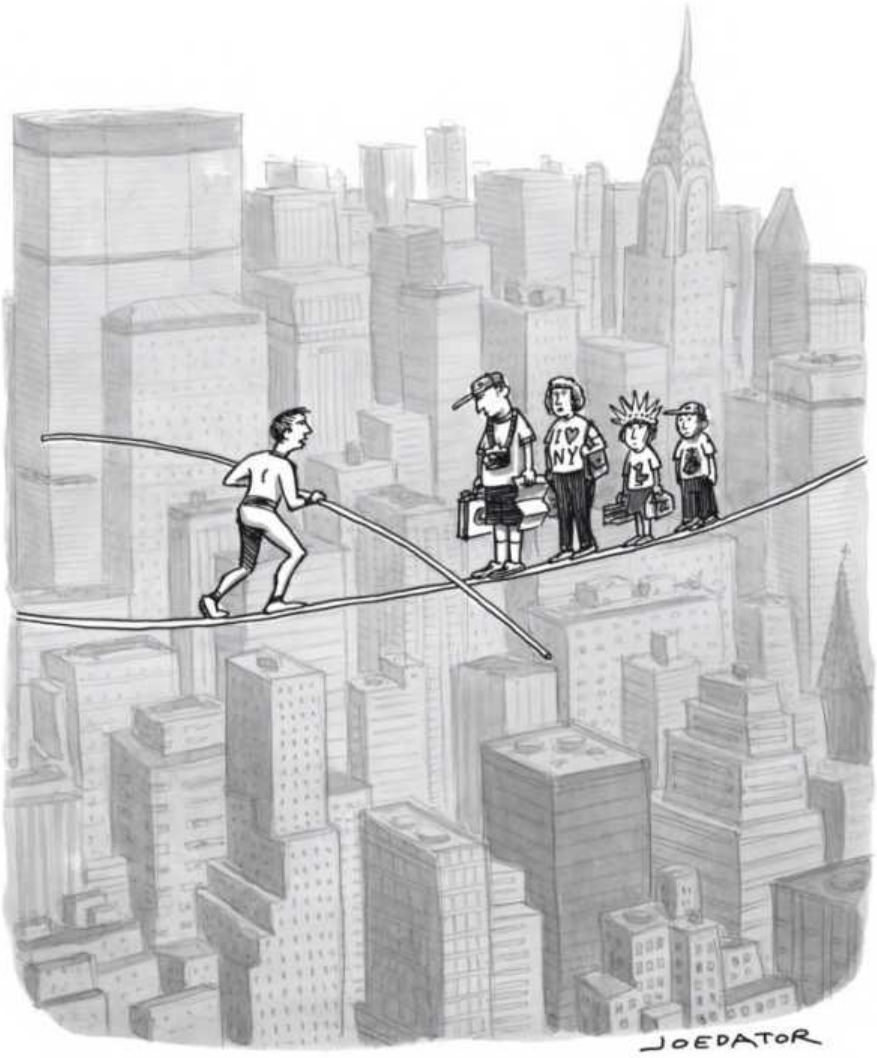
The pickets were met with an immediate backlash from the community, but Phelps was not deterred. He had been a committed civil-rights attorney in the nineteen-sixties and seventies, one of the few lawyers to represent black Kansans in discrimination suits, before the state disbarred him, in 1979, for harassing a court reporter who failed to have a transcript ready in time. Now Westboro targeted local churches, politicians, businesses, journalists, and anyone else who criticized Phelps's crusade. Throughout the nineties, Westboro members crisscrossed the country, protesting the funerals of AIDS victims and gay-pride parades. They picketed the funeral of Matthew Shepard, the gay man whose murder, in what was widely believed to be a hate crime, became a rallying cry for gay-rights activists. They picketed high schools, concerts, conferences, and film festivals, no matter how tenuous the connection to homosexuality or other sins. "Eventually, the targets broadened such that everyone was a target," Phelps-Roper said.

Phelps-Roper enjoyed picketing. When the targets were within driving distance, the group packed into a minivan and her grandfather saw them off from his driveway. "At five in the morning, he'd come out and give us all hugs," she said. When they flew, she and Libby recounted "Saturday Night Live" skits. Amazing things happened on the trips. In New Orleans, they ran into Ehud Barak, the former Israeli Prime Minister, and serenaded him with an anti-Semitic parody of Israel's national anthem. Phelps-Roper learned to hold two signs in each hand, a technique that Westboro members called the Butterfly. Her favorite slogans were "GOD IS YOUR ENEMY," "NO PEACE FOR THE WICKED," "GOD HATES YOUR IDOLS," and "MOURN FOR YOUR SINS." She laughed and sang and smiled in the face of angry crowds. "If you were ever upset or even scared, you do not show it, because this is not the time or the place," she said. Phelps-Roper believed that she was engaged in a profound act of love. Leviticus 19:17 commands, "Thou shalt not hate thy brother in thine heart: thou shalt in any wise rebuke thy neighbour, and not suffer sin upon him." "When you see someone is backing into traffic, you yell at them," Phelps-Roper said. "You don't mope around and say it's such a good idea."

One of the most common questions she was asked on the picket line was why she hated gay people so much. She didn't hate gay people, she would reply, God hated gay people. And the rest of the world hated them, too, by cheering them on as they doomed themselves to Hell. "We love these fags more than anyone," she would say.

In the summer of 2005, Westboro began protesting the funerals of soldiers killed in Iraq and Afghanistan, holding signs like "THANK GOD FOR IEDS." "They turned the country over to the fags—they're coming home in body bags!" Fred Phelps would say. He believed that 9/11 was God's punishment for America's embrace of homosexuality, but that, instead of repenting, Americans had drowned this warning in a flood of patriotism. Phelps believed that God had killed the soldiers to warn a doomed America, and that it was the church's job to make this fact explicit for the mourners. The scale of the picketing increased dramatically. One of Phelps-Roper's aunts checked the Department of Defense Web site every day for notifications of casualties. The outrage sparked by the soldier-funeral protests dwarfed anything that Phelps-Roper had experienced previously. Crowds of rowdy, sometimes violent counterprotesters tried to block their signs with huge American flags. A group of motorcyclists called the Patriot Guard Riders eventually began to follow Westboro members around the country, revving their engines to drown out their singing.

Phelps-Roper picketed her first military funeral in July, 2005, in Omaha. She was nineteen years old and a sophomore at Washburn University, a secular public college in Topeka, where many Westboro children went. The Westboro members stood across the street from the church, in a quiet neighborhood in South Omaha, as the mourners filed in. "Everybody's in close quarters, and marines in dress blues are just staring at us with—the word that comes to mind is hateful 'disgust.' Like 'How could you possibly do this?'" Phelps-Roper said. But, before the picket, she asked her mother to walk



"You see where Sixth Avenue meets Broadway? That's where you want to be."

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her through the Bible passages that justified their actions. "I'm, like, O.K., it's there," she said. "This is right." She added, "This was the only hope for mankind, and I was so grateful to be part of this ministry."

In September, 2009, when Phelps-Roper began to use Twitter in earnest, Westboro was preparing for the end of the world. Fred Phelps had preached for years that the end was near, but his sermons grew more dire after Barack Obama's election in 2008. Phelps believed that Obama was the Antichrist, and that his Presidency signalled the beginning of the Apocalypse. The sense of looming calamity was heightened by a multimillion-dollar judgment against the church that had been awarded, in 2007, to Albert Snyder, who sued Westboro after it picketed the funeral of his son Matt, a U.S. marine killed in Iraq. Westboro members drew prophecies from the Book of Revelation about how the end might unfold. First, the Supreme Court would overturn the Snyder verdict. The country would be so enraged by Westboro's victory that its members would be forced to flee to Israel. Obama would be crowned king of the world, then lead every nation in war against Israel. Israel would be destroyed, and only a hundred and forty-four thousand Jews who repented for killing Jesus would be spared. (Revelation says that a hundred and forty-four thousand "children of Israel" are "redeemed from among men.") Westboro members would lead these converted Jews through the wilderness until Christ returned and ushered them into Heaven. Phelps-Roper and her family members all got passports, so that they could travel to Israel. One day, she was in the grocery store and picked up a container of yogurt with Oreo pieces. She stared at it, thinking, We won't have modern conveniences like this in the wilderness. Is it better to learn to live without them, or to enjoy them while we can?

Still, she had a hard time believing in aspects of the future foretold by some church members, like the idea that they would soon be living in pink caves in Jordan. "We were making specific predictions about things without having, in my mind, sufficient scriptural support," she said. Many other members shared her bewilderment, she found, and so she turned to Twitter for answers. Most of the prophecies centered on Jews, so she found a list, published by the Jewish Telegraphic Agency, a syndicated news service, of the hundred most influential Jewish Twitter users. She created an account under the pseudonym Marissa Cohen and followed many of the people on the list, hoping to learn if Westboro's prophecies were coming true.

As the prophecies were developed, Westboro expanded the focus of its preaching to include the Jewish community. Members hoped to find the hundred and forty-four thousand repentant Jews. They picketed synagogues and sent anti-Semitic DVDs to Jewish organizations. Westboro called the protests the Fateful Fig Find, after a parable in the Book of Jeremiah that compares Jews who had been captured by the Babylonians to two baskets of figs, one good and one "naughty." Phelps-Roper thought that this initiative was more explicitly supported by the Bible than other parts of the prophecies were, so she threw herself into the effort. She wrote the church's press release: "WBC IS LOOKING FOR THE GOOD FIGS AMONG THE CHRIST-REJECTING HYPOCRITES!" She looked at the J.T.A. list of influential Jews and saw that No. 2 was David Abitbol, a Jerusalem-based Web developer and the founder of the Jewish-culture blog Jewlicious. With more than four thousand followers and

a habit of engaging with those who tweeted at him, he would be a prime target for Westboro's message of repentance, she figured.

On September 9, 2009, Shirley gave an interview to an Atlanta radio station, and Phelps-Roper shared a quote on Twitter. Phelps-Roper tagged Abitbol in the post so that he would see it. She wrote, "Atlanta: radio guy says 'Finish this sentence: the only good Jew is a . . .' Ma says 'REPENTANT Jew!' The only answer that suffices @jewlicious." "Thanks Megan!" he responded. "That's handy what with Yom Kippur coming up!" Phelps-Roper posted another tweet, spelling it out more clearly. "Oh & @jewlicious? Your dead rote rituals =\= true repentance. We know the diff. Rev. 3:9 You keep promoting sin, which belies the ugly truth." "Dead rote rituals?" he responded. "U mean like holding up God Hates Shrimp, err I mean Fag signs up? Your 'ministry' is a joke."

"Anybody's initial response to being confronted with the sort of stuff Westboro Baptist Church says is to tell them to fuck off," Abitbol told me. Abitbol is a large man in his early fifties who often has a shaggy Mohawk, which he typically covers with a Montreal Expos baseball cap. He was familiar with Westboro from its godhatesfags.com Web site. He had lived in Montreal in the nineties, and had become fascinated with the explosion of hate sites on the early Internet. "Most people, when they first get access to the Internet, the first thing they wanted to see was naked ladies," he told me. "The first thing I wanted to see was something I didn't have access to in Montreal: neo-Nazis and hate groups." There were few widely available search engines at the time, so he spent hours tracking down the Web sites of Holocaust deniers, anti-Semites, and racists of all types. He and a friend eventually created a directory called Net Hate, which listed the sites along with mocking descriptions. "We didn't want to debate them, we just wanted to make fun of them," he said. As for the Westboro members, "I just thought they were crazy."

Phelps-Roper got into an extended debate with Abitbol on Twitter. "Arguing is fun when you think you have all the answers," she said. But he was harder to get a bead on than other critics she had encountered. He had read the Old Testament in its original Hebrew, and was conversant in the New Testament as well. She was taken aback to see that he signed all his blog posts on Jewlicious with the handle "ck"—for "christ killer"—as if it were a badge of honor. Yet she found him funny and engaging. "I knew he was evil, but he was friendly, so I was especially wary, because you don't want to be seduced away from the truth by a crafty deceiver," Phelps-Roper said.

Abitbol had learned while running Net Hate that relating to hateful people on a human level was the best way to deal with them. He saw that Phelps-Roper had a lot of followers and was an influential person in the church, so he wanted to counter her message. And he wanted to humanize Jews to Westboro. "I wanted to be like really nice so that they would have a hard time hating me," he said. One day, he tweeted about the television show "Gossip Girl," and Phelps-Roper responded jocularly about one of its characters. "You know, for an evil something something, you sure do crack me up," Abitbol responded.

On December 20, 2009, Phelps-Roper was in the basement of her house, for a church function, when she checked Twitter on her phone and saw that Brittany Murphy, the thirty-two-year-old actress, had died. When she read the tweet aloud, other church members reacted with glee, celebrating another righteous judgment from God. "Lots of people were talking about going to picket her funeral," Phelps-Roper said. When Phelps-Roper was younger, news of terrible events had given her a visceral thrill. On 9/11, she was in the crowded hallway of her high school when she overheard someone talking about how an airplane had hit the World Trade Center. "Awesome!" she exclaimed, to the horror of a student next to her. She couldn't wait to picket Ground Zero. (The following March, she and other Westboro members travelled to New York City to protest what they described in a press release as "FDNY fags and terrorists.") But Phelps-Roper had loved Murphy in "Clueless," and she felt an unexpected pang—not quite sadness, but something close—over her death. As she continued scrolling through Twitter, she saw that it was full of people mourning Murphy. The contrast between the grief on Twitter and the buoyant mood in the basement unsettled her. She couldn't bring herself to post a tweet thanking God for Murphy's death. "I felt like I would be such a jackass to go on and post something like that," she said.

Her hesitance reflected a growing concern for the feelings of people outside Westboro. Church members disdained human feelings as something that people worshipped instead of the Bible. They even had a sign: "GOD HATES YOUR FEELINGS." They disregarded people's feelings in order to break their idols. Just a few months earlier, the Westboro Web site had received an e-mail arguing that the church's constant use of the word "fag" was needlessly offensive. "Get a grip, you presumptuous toad," Phelps-Roper had replied. She signed off, "Have a lovely day. You're going to Hell."

But on Twitter Phelps-Roper found that it was better to take a gentler tone. For one thing, Twitter's hundred-and-forty-character limit made it hard to fit both a florid insult and a scriptural point. And if she made things personal the conversation was inevitably derailed by a flood of angry tweets. She still preached God's hate, and still liberally deployed the word "fag," but she also sprinkled her tweets with cheerful exclamations and emoticons. She became adept at deflecting critics with a wry joke. "So, when do you drink the Kool-aid?" one user tweeted at her. "More of a Sunkist lemonade drinker, myself. =)" she replied. Phelps-Roper told me, "We weren't supposed to care about what people thought about us, but I did." As she developed her affable rhetorical style, she justified it with a proverb: "By long forbearing is a prince persuaded, and a soft tongue breaketh the bone."

Other Twitter users were fascinated by the dissonance between Westboro's loathsome reputation and the goofy, pop-culture-obsessed millennial who Phelps-Roper seemed to be on Twitter. "I remember just thinking, How can somebody who appreciates good

music believe so many hateful things?" Graham Hughes said. In November, 2009, Hughes, then a college student in British Columbia, interviewed Phelps-Roper for a religious-studies class. Afterward, they corresponded frequently on Twitter. When Hughes was hospitalized with a brain infection, Phelps-Roper showed him more concern than many of his real-life friends. "I knew there was a genuine connection between us," he said.

As Phelps-Roper continued to tweet, she developed relationships with more people like Hughes. There was a Jewish marketing consultant in Brooklyn who abhorred Westboro's tactics but supported the church's right to express its views. There was a young Australian guy who tweeted political jokes that she and her younger sister Grace found hilarious. "It was like I was becoming part of a community," Phelps-Roper said. By following her opponents' feeds, she absorbed their thoughts on the world, learned what food they ate, and saw photographs of their babies. "I was beginning to see them as human," she said. When she read about an earthquake that struck off Canada's Pacific coast, she sent a concerned tweet to Graham Hughes: "Isn't this close to you?"

In February, 2010, Westboro protested a festival in Long Beach, California, that David Abitbol had organized through Jewlicious. Phelps-Roper's conversations with Abitbol had continued through the winter, and she knew that debating him in person would be more challenging than on Twitter. The church set up its picket a block from the Jewish community center where the festival was taking place. Phelps-Roper held four signs, while an Israeli flag dragged on the ground from her leg. The church members were quickly mobbed by an angry crowd. "Each of us was really surrounded," Phelps-Roper said. "Two really old women came up behind me and started whispering the filthiest stuff I'd ever heard."

She recognized Abitbol from his Twitter avatar. They made some small talk—Abitbol was amused by a sign, held by one of Phelps-Roper's sisters, that said "YOUR RABBI IS A WHORE"—then began to debate her about Westboro's doctrine. "Our in-person interaction resembled our Twitter interaction," Phelps-Roper said. "Funny, friendly, but definitely on opposite sides and each sticking to our guns." Abitbol asked why Westboro always denounced homosexuality but never mentioned the fact that Leviticus also forbade having sex with a woman who was menstruating. The question embarrassed Phelps-Roper—"I didn't want to talk about it because, ugh"—but it did strike her as an interesting point. As far as she could remember, her grandfather had never addressed that issue from the pulpit. Still, Phelps-Roper enjoyed the exchange with Abitbol. Not long after, she told him that Westboro would be picketing the General Assembly of the Jewish Federations, in New Orleans, that year. Abitbol said that he'd be there, too, and when they met again they exchanged gifts.

Phelps-Roper and Abitbol continued their conversations via e-mail and Twitter's direct-message function. In Phelps-Roper's effort to better understand Westboro's new prophecies, she had bought a copy of "The Complete Idiot's Guide to Understanding Judaism," but she found it more profitable just to ask Abitbol her questions. Here was a real live Orthodox Jew who lived in Israel and was more than happy to enlighten her. During their debates over Scripture, Phelps-Roper sometimes quoted passages from the Old Testament; Abitbol often countered that their meaning differed in the original Hebrew, so Phelps-Roper bought some language-learning software. She figured that, since she would soon be living in Israel awaiting the end of the world, she should learn the language. Abitbol helped her with the vocabulary.

Phelps-Roper still urged Abitbol to repent, but as someone who was concerned about a wayward friend. "I just wish you would obey God and use your considerable platform to warn your audience about the consequences of engaging in conduct that God calls abomination," she e-mailed Abitbol in October, 2010.

In response, Abitbol kept pressing Phelps-Roper on Westboro's doctrine. One day, he asked about a Westboro sign that said "DEATH PENALTY FOR FAGS," referring to a commandment from Leviticus. Abitbol pointed out that Jesus had said, "He that is without sin among you, let him first cast a

SHOWCASE

HEAD SHOT

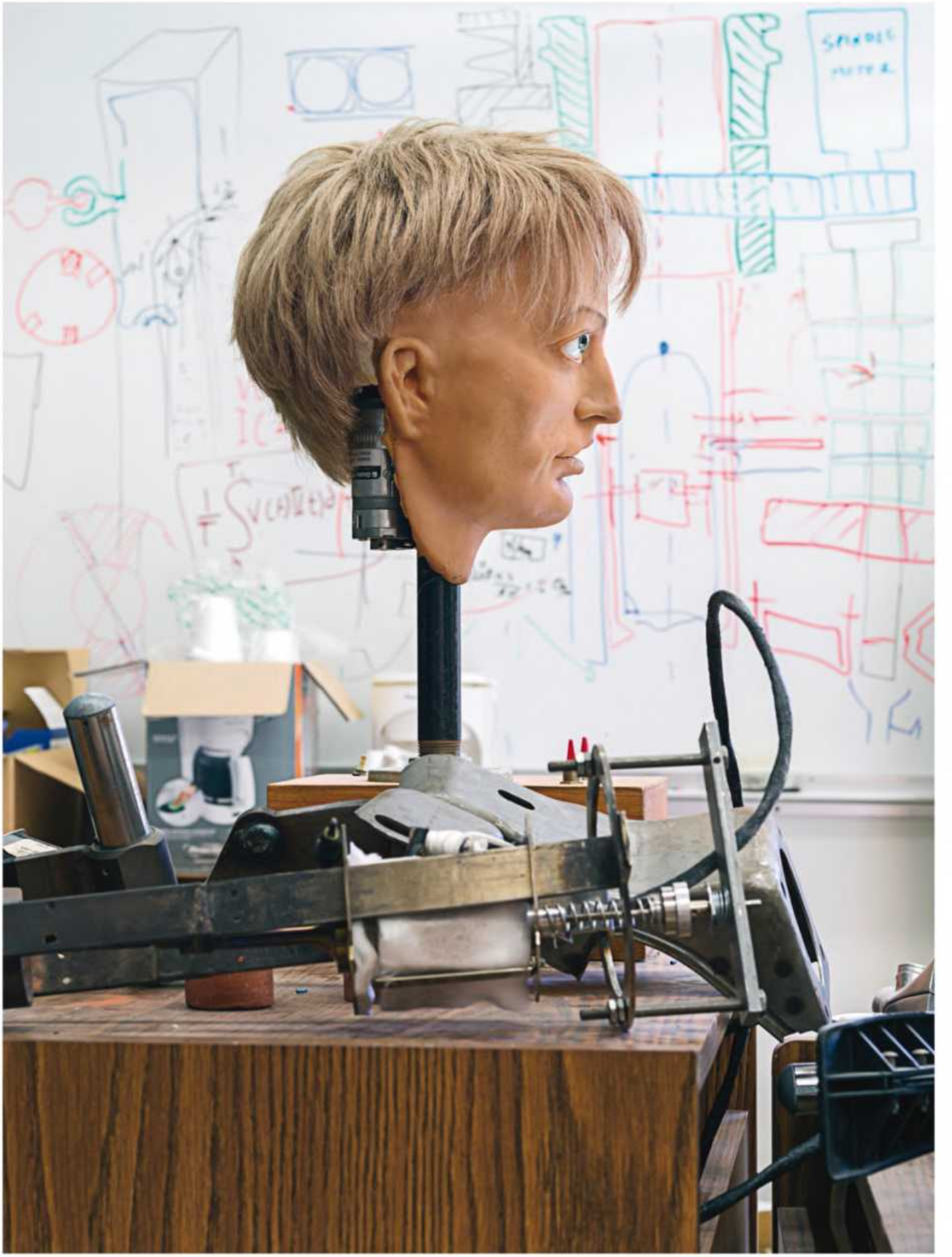
PHOTOGRAPH BY THOMAS STRUTH

When, two years ago, the German artist Thomas Struth photographed this robotic head, at the NASA Jet Propulsion Laboratory, in Pasadena, it wasn't his first encounter with a stiff upper lip: Queen Elizabeth II and the Duke of Edinburgh had recently posed for him. (Janet Malcolm published a Profile of Struth in this magazine shortly afterward.) There's an air of sangfroid in Struth's pictures of people—in the taut portraits of families gazing straight at the camera, and in the famous images of museums swarming with distracted tourists.

Technology is a more recent muse. In 2007, on a visit to one of the world's largest shipyards, on Geoje Island, in South Korea, Struth saw a vast drilling rig under construction, the scale and complexity of which reflected the stealth power of the future. Since then, he has transformed such subjects as machine-assisted surgery, a fusion experiment at a physics lab, and a gang of robots at Georgia Tech into compositions that slow the process of seeing while they set the mind racing.

In this portrait of a polymer head—it's used to demonstrate artificial muscles—Struth brings a humanist sensibility to a project that some might call post-human. The picture's profile format nods to early-Renaissance portraiture. (Struth trained as a painter.) The scribbled notations on the whiteboard smuggle absent scientists into the frame, and the solitary android looks far from menacing. It's a vulnerable puppet awaiting the hand—and the eye—that will bring it to life.

—Andrea K. Scott



stone." Abitbol knew that at least one member of Westboro had committed a sin that Leviticus also deems a capital crime. Phelps-Roper's oldest brother, Sam, was the product of a relationship that Shirley had had with a man she met while she was in law school, before she married Megan's father.

Shirley's sin of fornication was often thrown in the church members' faces by counterprotesters. Westboro always argued that the difference between Shirley and gay people was that Shirley had repented of her sin, whereas gays marched in pride parades. But Abitbol wrote that if gay people were killed they wouldn't have the opportunity to repent.

Phelps-Roper was struck by the double standard, and, as she did whenever she had a question about doctrine, she brought up the issue with her mother. Shirley responded that Romans said gays were "worthy of death," and that if it was good enough for God it was good enough for Westboro. "It was such a settled point that they've been preaching for so long it's almost like it didn't mean anything to her," Phelps-Roper said. Still, she concluded that Westboro was in the wrong. "That was the first time I came to a place where I disagreed, I knew I disagreed, and I didn't accept the answer that they gave," she said. Phelps-Roper knew that to press the issue would create problems for her in the church, so she quietly stopped holding the "DEATH PENALTY FOR FAGS" sign. There were plenty of other signs whose message she still believed in wholeheartedly. She also put an end to the conversations with Abitbol.

Phelps-Roper found it easy to ignore her doubt amid the greater publicity that Westboro was receiving, much of it tied to her Twitter activity. In February, 2011, the hacker collective Anonymous declared war against Westboro. On Twitter, Phelps-Roper taunted the group's members as "crybaby hackers." Anonymous retaliated by hacking godhatesfags.com, and blogs seized on the drama. "Thanks, Anonymous! Your efforts to shut up God's word only serve to publish it further," Phelps-Roper tweeted. In March, Westboro members walked out of a screening of the film "Red State," which spoofed the church. They had been invited by the director, Kevin Smith, with whom Phelps-Roper had kept up a running feud on Twitter since World AIDS Day. Ten days earlier, the Supreme Court had overturned the judgment against Westboro in the Albert Snyder case. Phelps-Roper was inundated with tweets and new followers. That month, she tweeted more than two thousand times; by the end of the month, she had more than seven thousand followers. "That explosion of activity, it was insane," she said.

But as other members of the church joined Twitter they began to question her friendly relations with outsiders. In April, 2011, the BBC aired one of Louis Theroux's documentaries about Westboro. In one scene, Phelps-Roper explained how she used Twitter to keep up with a group of four Dutch filmmakers who had visited Westboro in 2010. She showed Theroux a picture of one of the filmmakers, Pepijn Borgwat, a smiling, handsome young man holding a package of chocolate truffles that she and her sister Grace had given to him.

The day after the documentary aired, Sam Phelps-Roper sent an e-mail to church members urging more discretion in their tweets. "I understand the concept of showing the world our brotherly kindness, but we don't have to let it all hang out," he wrote. Megan's father made her block the Dutch journalists from her private Twitter account. "It feels like we are opening ourselves up for entangling ourselves with the affairs or cares of this life," he e-mailed Phelps-Roper and her siblings. Phelps-Roper said, "It made me scared for myself that I wanted that. And so I was, like, 'O.K., you gotta step back.'"

Another online relationship proved more threatening. In February, 2011, Phelps-Roper began to have conversations on Twitter with a user named @F_K_A. His avatar was Robert Redford in "The Great Gatsby." He had learned of Westboro after reading an article about the Anonymous hack. "He sent me a tweet, and initially it was like this angry, nasty tweet," Phelps-Roper said. But @F_K_A was disarmed by Phelps-Roper's friendly demeanor. He began to ask her questions about life in Westboro, and, because he was curious instead of condemning, she kept answering them. One day, Phelps-Roper recalled, "I asked him some kind of pointed question about the Bible. He said something like, 'I can't answer that, but I have never been beaten in Words with Friends' "—the popular online Scrabble knockoff. Phelps-Roper replied, "I can't boast the same. =)" She put her Words with Friends username at the end of the tweet.

"I think whatever's going to happen next has already happened."

They began to talk about the church using the in-game chat function, free from Twitter's character limit. @F_K_A told Phelps-Roper to call him C.G. But C.G. remained a mystery. She knew that he was an attorney, but she didn't know where he lived or how old he was. "He was careful not to reveal anything about himself," Phelps-Roper said.

Like David Abitbol, C.G. argued against Westboro's beliefs and practices, but while Abitbol's arguments were doctrinal C.G. was most critical of Westboro's cruelty. "We had the same discussion several times when someone would die," Phelps-Roper said. C.G. urged Phelps-Roper to think of how much hurt it must cause the families of the deceased to see Phelps-Roper and her family rejoicing. Westboro divided people into good and evil, but, Phelps-Roper said, C.G. "always tried to advocate for a third group of people: people who were decent but not religious." She had heard all these arguments before, but they had never affected her as they did when C.G. made them. "I just really liked him," she said. "He seemed to genuinely like people and care about people, and that resonated with me."

Phelps-Roper increasingly found herself turning to Bible passages where tragedy is not met with joy. The Old Testament prophet Elisha, for example, weeps when he foresees disaster for Israel. One day in July, 2011, Phelps-Roper was on Twitter when she came across a link to a series of photographs about a famine in Somalia. The first image was of a tiny malnourished child. She burst into tears at her desk. Her mother asked what was wrong, and Phelps-Roper showed her the gallery. Her mother quickly composed a triumphant blog post about the famine. "Thank God for famine in East Africa!" she wrote. "God is longsuffering and patient, but he repays the wicked TO THEIR FACE!" When Brittany Murphy died, Phelps-Roper had seen the disparity between her reaction and that of the rest of the church as a sign that something was wrong with her. Now the contradiction of her mother's glee and her own sadness made her wonder if something was wrong with the church.

Phelps-Roper's conversations with C.G. often drifted away from morality. C.G. liked indie rock and literary fiction. He introduced Phelps-Roper to bands like the Antlers, Blind Pilot, and Cults—"funnily enough," she said—and to the novels of David Foster Wallace and Marilynne Robinson. "Hipster shit," Phelps-Roper said. He turned her on to the Field Notes brand of notebooks. He poked fun at the inelegant fonts that Westboro used for its press releases. After C.G. complimented her on her grammar, she took pains to make sure that her tweets were free of clunky text-message abbreviations.

As Phelps-Roper developed her relationship with C.G., her sister Grace grew suspicious. "Suddenly, her taste in music started changing," Grace told me. "It annoyed me, because it wasn't coming from Megan. It was coming from him, this question mark of a person that I don't get to know about, but she has some kind of thing with." As young children, Grace and Megan had squabbled constantly, but they had grown close. Grace was seven years younger than Megan, and still in high school at the time. Grace would scroll through Megan's iPhone, asking about the various messages and e-mails. But soon after Megan started talking to C.G. she stopped letting Grace look at her phone. "I remember thinking, What the heck? What are you hiding?" Grace said.

For young women in Westboro, having romantic interactions with someone outside the church was forbidden. When Phelps-Roper was growing up, one of her cousins had been pushed out of the church for, among other things, getting entangled with boys; other young women had been harshly punished. Phelps-Roper had long assumed that she would likely never get married, since she was related to almost every male in the church. "I was terrified of even thinking about guys," she said. "It's not just the physical stuff that can get you in trouble." She did her best to displace her feelings for C.G. onto the music and books he recommended, which she fervently consumed. "I was in denial," she said.

Then, on September 30, 2011, she had a dream: It was a beautiful summer day, and she was standing on the driveway of the church. A black car with tinted windows pulled up, and a tall, blond man got out. She couldn't see his face, but she knew it was C.G. She walked up to him, and they embraced. She knew her family could see them on the surveillance cameras that line the Block, but she didn't care. "It was so real, that feeling of wanting to be with him," Phelps-Roper told me. She woke up fighting back tears. "He was not a good person, according to the church," she said. "And the fact that I dreamed about him, and the strong feeling of wanting that relationship, represented huge danger to me." That day, she told C.G. that they couldn't talk anymore. She deleted her Words with Friends account. C.G. deleted his Twitter account.

Phelps-Roper tried to throw herself back into the Westboro community, but the atmosphere had changed while she was distracted by her relationship with C.G. It had started in April, 2011. Her mother seemed mysteriously troubled. After Phelps-Roper pressed her parents, they showed her an e-mail they'd received from her oldest brother, Sam, and Steve Drain, another church member. It accused her mother of lacking humility, saying that she was too zealous in correcting other members' behavior and had overreached her authority on a number of occasions, Phelps-Roper told me. Reading the e-mail made her sick with fear. When a Westboro member was singled out for bad behavior, it often triggered a harrowing period of discipline. The smallest transgression could spark another round of punishment, until the member either shaped up or was kicked out of the church.

Shirley's role in the church was reduced dramatically. "My mother was supposed to be primarily a mother and a caretaker," Zach Phelps-Roper, Megan's younger brother, told me. Megan took over picket planning, while Steve Drain became the church's media manager. The Phelps-Roper house was now quiet, as the flow of church members and reporters stopped. "I watched her all my life work so hard and sacrifice so much, and just be so willing to do anything for anybody," Phelps-Roper said. "She had to be put in her place, essentially, and that feeling—it just was really, really wrong to me." (Drain insists that Megan's description of the letter is inaccurate. He said that it was a "disciplinary message," but wouldn't reveal its contents. "We don't air our dirty laundry," he said.)

An all-male group of nine elders took

control of church affairs. Previously, decisions at Westboro had been hashed out in church meetings, where consensus was required before moving forward. But the elders met separately before bringing their decisions to the rest of the group. The church became more secretive, as members were reluctant to discuss important issues for fear of appearing to go behind the elders' backs.

Women like Shirley and her older sister Margie—an attorney who had argued the Snyder case in front of the Supreme Court—had always been among the most public and influential members of the church. Westboro members drew on stories of powerful women in the Bible, like Deborah, a prophet and judge of Israel. But now the emphasis shifted to passages about women submitting to their husbands. Fred Phelps encouraged church members to read the Evangelical writer John R. Rice's book "Bobbed Hair, Bossy Wives, and Women Preachers," from 1941, which offered a view of gender roles that was regressive even when it was published. "It suddenly sucked to be a woman," Phelps-Roper said. "It was, like, I would need to get permission from Dad to talk to anybody else."

Westboro women had long been forbidden to cut their hair, and had restrictions on other aspects of their appearance. But now the elders required more severe standards of modesty. Phelps-Roper had to wear high-necked shirts and dresses or shorts that covered her knees. After one shopping trip with her mother and her sisters, Phelps-Roper had to show her clothes to her father and her brother Sam, to make sure that they were appropriate. She was barred from wearing colorful nail polish and her favorite gold sandals to church. Phelps-Roper was upset to learn that some of her cousins lived under more liberal standards. How could God's judgment differ from house to house?

Phelps-Roper's confusion soon turned to outrage. In 2012, she was twenty-six years old, but she was still being treated like a child. Once-minor indignities, like being accompanied by an adult chaperone while eating lunch at a restaurant with other young church members, now seemed unbearable. In April, she was shocked when Westboro expelled a cousin of hers without adhering to the process that the church had always followed, which was derived from the Book of Matthew. Typically, expulsion resulted only after a unanimous decision, but in the cousin's case she was excluded over other members' objections. (Drain recalls no objections, and said, "Everything was done decently and in accordance with Scripture.") "It stopped feeling like this larger-than-life divine institution ordained and led by God, and more like the sniping and sordid activity of men who wanted to be in control," Phelps-Roper said.

She resented the increasing authority wielded by Drain. One of the few Westboro members unrelated to Fred Phelps, Drain had visited Topeka in 2000 to film a skeptical documentary about the church, but he soon became convinced of its message. The next year, he and his family joined the church. He'd long pushed for a larger role in Westboro, and after the elders came to power his influence increased. In February, 2012, during the funeral of Whitney Houston, in New Jersey, Drain urged Phelps-Roper and other members to tweet poorly Photoshopped images that depicted them haranguing mourners. The media quickly unravelled the hoax. (Drain told me that the fake picket was never meant to be taken literally.)

Phelps-Roper was embarrassed by the debacle. It undermined her own proud claims on Twitter to be spreading God's truth—and lying violated Scripture. In addition, she now had to have all her media appearances approved by Drain. "It seems like he wants to be Pope Steve and for no one else to do anything without his permission," she wrote in her journal. "I hate it so much."

Megan's doubt engendered by the "DEATH PENALTY FOR FAGS" sign grew. She started to complain to her mother, saying that the elders were not obeying the Bible. They treated her mother and other members with cruelty when the Bible required brotherly love, she said. The elders acted arrogantly and tolerated no dissent, when God demanded meekness and humility. Phelps-Roper was struck by the similarities between her arguments and what C.G. and David Abitbol had always said about the church. "It was like we were finally doing to ourselves what we had done to everyone else," she said. "Seeing those parallels was really disorienting."

Drain disputed many of Phelps-Roper's characterizations of the changes in the church. He acknowledged that

ICE FOR THE ICE TRADE

Everybody wants a piece of me.

I have been weighed and measured,
tested and standardized,
throughout my young life. It happens to everyone,
or to everyone with my ability.

Now I live quietly
and mostly in the dark, amid sawdust and sheer
or streaky wooden surfaces. My role,
when I reach maturity,
may be to help people behave
more sociably, and reduce
the irritations of summer,
or else to make it easier to eat.

For reasons I cannot fathom, I weep when it rains.
My handlers keep me wrapped in awkward cloth.
They will not let me touch my friends
or show any curves. They have taught me how to shave.

A few twigs and dragonfly wings got caught
near the center of me long ago; they serve
to distinguish me from others of my kind,
along with some bubbles of air.

I am worth more when I am clear.
When I am most desirable
you should be able to see yourself through me.

Some of my distant relatives
will probably never go far,
because they are too irregular, or opaque.
Many of us will end on a cart.

I, on the other hand, have had my work
cut out for me by so many gloves
and tongs, pallets and barges, poles and planks
that I am sure I will go to New York;
there people who own
the rights to me will give elaborate thanks
to one another, and go on to take me apart.

—*Stephen Burt*

an all-male group of elders assumed preaching duties, but not that this led to a less open atmosphere in the church. "There's definitely more participation than when I first got here, in 2001, when you had one person doing all the sermons," he said, referring to Fred Phelps.

He also denied that women in the church had been significantly marginalized. "Women do a lot at Westboro now, as they always have," he said. Shirley's role was not reduced as a punishment for overstepping her bounds, he said. Instead, after the Snyder decision, other members had volunteered to help her deal with an overwhelming torrent of media. "We lifted her burden," he said. He pointed out that Shirley had recently spoken at a picket protesting Kim Davis, the Kentucky clerk who had refused to issue marriage licenses to gay couples—the church took issue with Davis's remarriages after divorce. (Through Drain, Megan's parents declined to comment.)

Phelps-Roper first considered leaving the church on July 4, 2012. She and Grace were in the basement of another Westboro family's house, painting the walls. The song "Just One," by the indie folk group Blind Pilot—a band that C.G. had recommended—played on the stereo. The lyrics seemed to reflect her dilemma perfectly: "And will I break and will I bow/if I cannot let it go?" Then came the chorus: "I can't believe we get just one." She suddenly thought, What if Westboro had been wrong about everything? What if she was spending her one life hurting people, picking fights with the entire world, for nothing? "It was, like, just the fact that I thought about it, I had to leave right then," she said. "I felt like I was going to jump out of my skin."

The next day, she mentioned the possibility of leaving to Grace. Grace was horrified. "It just sounded ridiculous to even suggest it," Grace told me. "These were the points I brought up: we're never going to see our families again, we're going to go to Hell for eternity, and our life will be meaningless." Megan, still uncertain, agreed. But she plunged into a profound crisis of faith. "It was like flipping a switch," she said. "So many other thoughts came in that I'd never pursued, and that's every doubt that I'd ever had, everything that had ever seemed illogical or off."

When they were together, Megan engaged Grace in interminable theological conversations. When they were apart, Megan detailed her doubts in text messages. One day, she texted Grace, "What if the God of the Bible isn't the God of creation? We don't believe that the Koran has the truth about God. Is it just because we were told forever that this is How Things Are?" She added, "Does it really make you happy when you hear about people dying or starving or being maimed? Do you really want to ask God to hurt people? I ask myself these questions. I think the answer is no. When I'm not scared of the answer, I know the answer is no." Two days later, she texted Grace about Hell: "Why do we think it's real? It's starting to seem made up to scare people into doing what they say." Grace replied, "But what if?"

That day, Grace wrote to Megan, "Our belief in God has always curbed everything. Like, pain & sorrow, I mean. Without that we'd only have our belief in each other. But we are human & humans die. What would we have if we didn't have each other?" For Megan, the answer could be found in other people. "We know what it is to be kind & good to people," she wrote. "We would just have to find somewhere else, other people to love and care about and help, too." Grace wrote back, "I don't want other people." In truth, Megan didn't want other people, either; she desperately wanted things in Westboro to go back to the way they had been. But the idea of living among outsiders was no longer unimaginable.

Phelps-Roper spent the summer and the fall in an existential spiral. She would conclude that everything about Westboro's doctrine was wrong, only to be seized with terror that these thoughts were a test from God, and she was failing. "You literally feel insane," she said. Eventually, her doubts won out. "I just couldn't keep up the charade," she said. "I couldn't bring myself to do the things we were doing and say the things we were saying."

She largely stopped tweeting and tried to avoid journalists on the picket line, for fear that she might say something that revealed her misgivings. At one protest, a journalism student cornered her and asked if she ever got tired of picketing. "I honestly replied no," she wrote

in her journal. "It's not about being tired, it's about not believing in it anymore. If I believed it, I could do it forever." In October, Megan finally persuaded Grace to leave. At the end of October, the sisters started secretly moving their possessions to the house of one of their high-school teachers, who agreed to help them. Many of Megan and Grace's young relatives who left the church had slipped away quietly, in order to avoid confronting their families. But the sisters wanted to explain to their parents the reasons behind their decision.

As the sisters agonized over whether to leave, they befriended an older man in the church and his wife, eventually becoming allies in discontent. For a while, they all planned to leave together. Then the couple's marriage began to deteriorate, and the husband told Megan and Grace that they were going to divorce. Grace became involved in a brief romantic relationship with the man. After the relationship ended, the wife learned about it, and sent a letter to Megan and Grace's parents revealing both the relationship and the sisters' plan to leave.

On Sunday, November 11th, the family had just returned from church when Megan and Grace were called into their parents' bedroom, where their father began to read the letter out loud. Megan told Grace quietly that they had to leave: "It was like the world was exploding and I didn't want to be around to see it." Their mother tried to calm things down. Their parents wanted to talk things over—they seemed to think that the sisters could be persuaded to stay—but Megan and Grace had made up their minds. As Grace packed, their father came into her room and asked what she wanted the church to do differently. "I want you and everyone else to leave with me," Grace replied. Their parents were stunned, but they didn't try to force the sisters to stay.

As the sisters packed, their younger brother Zach sat at the piano downstairs, crying and playing hymns, which he hoped might change their mind. Other church members stopped by to say goodbye and to warn the sisters of the consequences of their decision. "The fact that I'm coming face to face with the damage that I was doing to them was even worse than anything else that was happening to me," Phelps-Roper said. Her parents told her to say goodbye to her grandfather. She walked over to the residence where her grandparents lived, above the church sanctuary. When Megan told them she was leaving, her grandfather looked at her grandmother and said, "Well, I thought we had a jewel this time."

Megan and Grace's father drove them to a hotel in Topeka, where he had paid for a room, but they were too scared to spend the night alone, so they called the teacher who had agreed to store their boxes. That night, they cried themselves to sleep on couches in his basement. Megan and Grace returned to their house the next day with a U-Haul truck to pick up their remaining possessions. As they walked away for the last time, Shirley called after them, "You know you can always come back."

For the next few months, the sisters drifted. They lived in Lawrence for a month with their cousin Libby, who had also left the church, while Grace finished the first semester of her sophomore year at Washburn. They travelled to Deadwood, South Dakota, because Megan wanted to see the Black Hills. As she drove there, she kept imagining her car careering off the highway—she was so afraid of God's wrath. "We were a mess, crying all the time," she said. Phelps-Roper was tempted to hide in the Black Hills forever, but soon decided that, after spending so many years as the public face of Westboro, she wanted to go public with how she'd left the church, and to start making amends for the hurt she had caused. In February, 2013, she wrote a statement on the blogging platform Medium. "Until now, our names have been synonymous with 'God Hates Fags,' " she wrote. "What we can do is try to find a better way to live from here on." She posted a link to the statement on Twitter. It was her first tweet in three months. "Hi," she wrote. Tweets of encouragement and praise poured in. "I expected a lot more people to be unforgiving," she said.

When David Abitbol learned that the sisters had left Westboro, he invited them to speak at the next Jewlicious festival in Long Beach. They agreed, hoping that the experience might help them to find their way, and to finally understand a community that they had vilified for so long. "It was like we were just reaching out and grabbing on to whatever was around," Megan said. Abitbol said, "People, before they met them, were, like, 'So, now they're not batshit-crazy gay haters and we're supposed to love them? Fuck that.' " He added, "And then they heard them speak, and there wasn't a dry eye in the house." The sisters befriended their hosts, an Orthodox rabbi and his family. They went kosher-grocery shopping together, and Megan and Grace looked after the kids. Grace became especially close with the family, and ended up staying for more than a month. "They were amazing and super-kind," Phelps-Roper said. Abitbol joked about the dramatic role reversal: " 'Your Rabbi Is a Whore'? Your rabbi is a *host*."

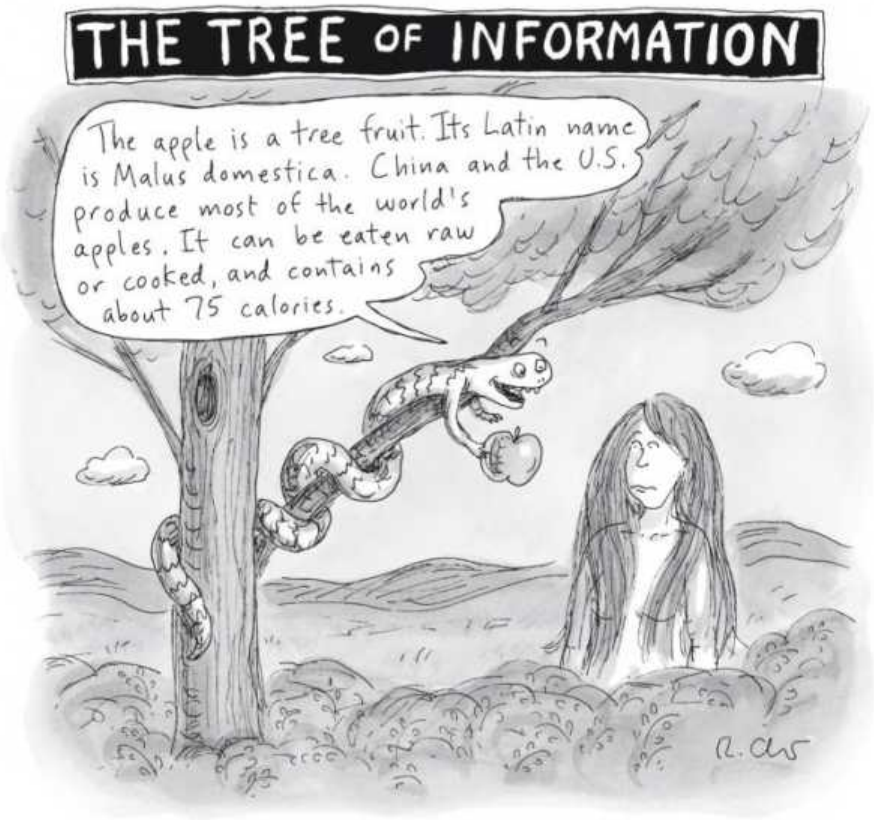
Megan tried to put herself in situations that challenged the intolerance she had been indoctrinated with. One evening, after speaking at a Jewish festival in Montreal, she and Grace passed a group of drag queens on the sidewalk outside a cabaret. She felt a surge of disgust, but when Grace asked if they could watch the show she agreed. "It felt illicit," she said. "Like, oh, my gosh, I can't believe I'm here." She and Grace ended up dancing onstage during the intermission. Wherever Megan and Grace went, they met people who wanted to help them, despite all the hurt they had caused. The experience solidified Megan's increasing conviction that no person or group could claim a monopoly on moral truth. Slowly, her fears about God's judgment—the first terrifying understanding of her faith as a child, and its most stubborn remnant—faded.

"As undeniable as they had seemed before, they seemed just as impossible now," she said.

One Sunday last February, I went with Megan and Grace to visit their old neighborhood. We parked a few blocks from the church and walked down a quiet street lined with ranch-style homes. It was sunny and warm for a winter day in Kansas. Phelps-Roper wore a green polka-dot dress and high leather boots, and her long curly hair—she still hadn't cut it since leaving the church—fell down her back. Now twenty-nine, she lives in a small town in South Dakota, where she works at a title company. Six months after she left the church, she went on a date with C.G. They met in Omaha, in driving distance for both of them, and saw "The Great Gatsby," the Baz Luhrmann movie. "It's hard to even describe how weird it was," she told me. It was her first date ever, and it was with someone who had become a symbol of the unattainable. "I was quite a bit like a teen-ager. He put his arm around my waist at one point, and I just stood up so straight." She and C.G. connected as strongly in person as they had online, and they now live together.

When we reached the Block, we walked along the privacy fence. In front of each house where Westboro members live, Megan pointed out colorful numbers on the curb; Grace had helped paint them when she was a teen-ager. We passed the Phelps-Roper house and came to an intersection. A group of men and boys came toward us. "I can't tell yet, but it sure looks like a group of brothers and cousins," Megan said. First came five of their young cousins, followed by two of their brothers, Sam and Noah. Steve Drain, a large bearded man, trailed behind. They carried tools. Megan later explained that they had probably just come from doing repairs on a Westboro member's house. The group passed us without stopping. Grace called out, "Hi!" Sam nodded and gave a terse smile and a small wave. "Hi, how are you?" he said. Sam and Noah had recently had birthdays, and Megan wished them a belated happy birthday. The sisters said nothing to Drain. The crew quickly disappeared into a house.

We reached the church, an unremarkable white and brown mock-Tudor building on the northeast corner of the Block. A banner advertised a Westboro Web site, godhatesamerica.com. Two American flags—one of them rainbow colored—flew upside down from a pole. The church sign read "ST. VALENTINE IS A CATHOLIC IDOL AND AN EXCUSE TO FORNICATE! JUDE 7."



Directly across the street stood a house painted in bright, horizontal rainbow stripes. The house had been bought, in 2012, by Planting Peace, a nonprofit group whose mission, according to its Web site, is "spreading peace in a hurting world." The Equality House, as it's known, is home to a group of young L.G.B.T. activists. Planting Peace has worked with former Westboro members to spread its message of tolerance. Megan first visited the house in 2013, after her cousin Libby encouraged her to visit. She sneaked in the back door, for fear of being spotted by her family.

Today, Megan and Grace's only connection to Westboro is virtual. Although Phelps-Roper no longer believes that the Bible is the word of God, she still reads it to try to find scriptural arguments that could encourage Westboro to take a more humane approach to the world. Sometimes she'll tweet passages, knowing that church members will see them. After they left the church, Megan and Grace were blocked from Westboro's Twitter accounts, but they created a secret account to follow them. Sometimes, when her mother appears in a video, Megan will loop it over and over, just to hear her voice.

Fred Phelps died in March, 2014, at the age of eighty-four. Former members of the church told me that Fred had had a softening of heart at the end of his life and had been excommunicated. (The church denies these claims.) Zach Phelps-Roper, Megan's younger brother, who left the church later that year, said that one of the precipitating events in Fred's exclusion had been expressing kindness toward the Equality House. At a church meeting, Zach recalls, members discussed the episode: "He stepped out the front door of the church and looked at the Rainbow House, the Planting Peace organization, and looked over and said, 'You're good people.'" ♦

NEWYORKER.COM
Megan Phelps-Roper comments on tweets she once posted for the church.

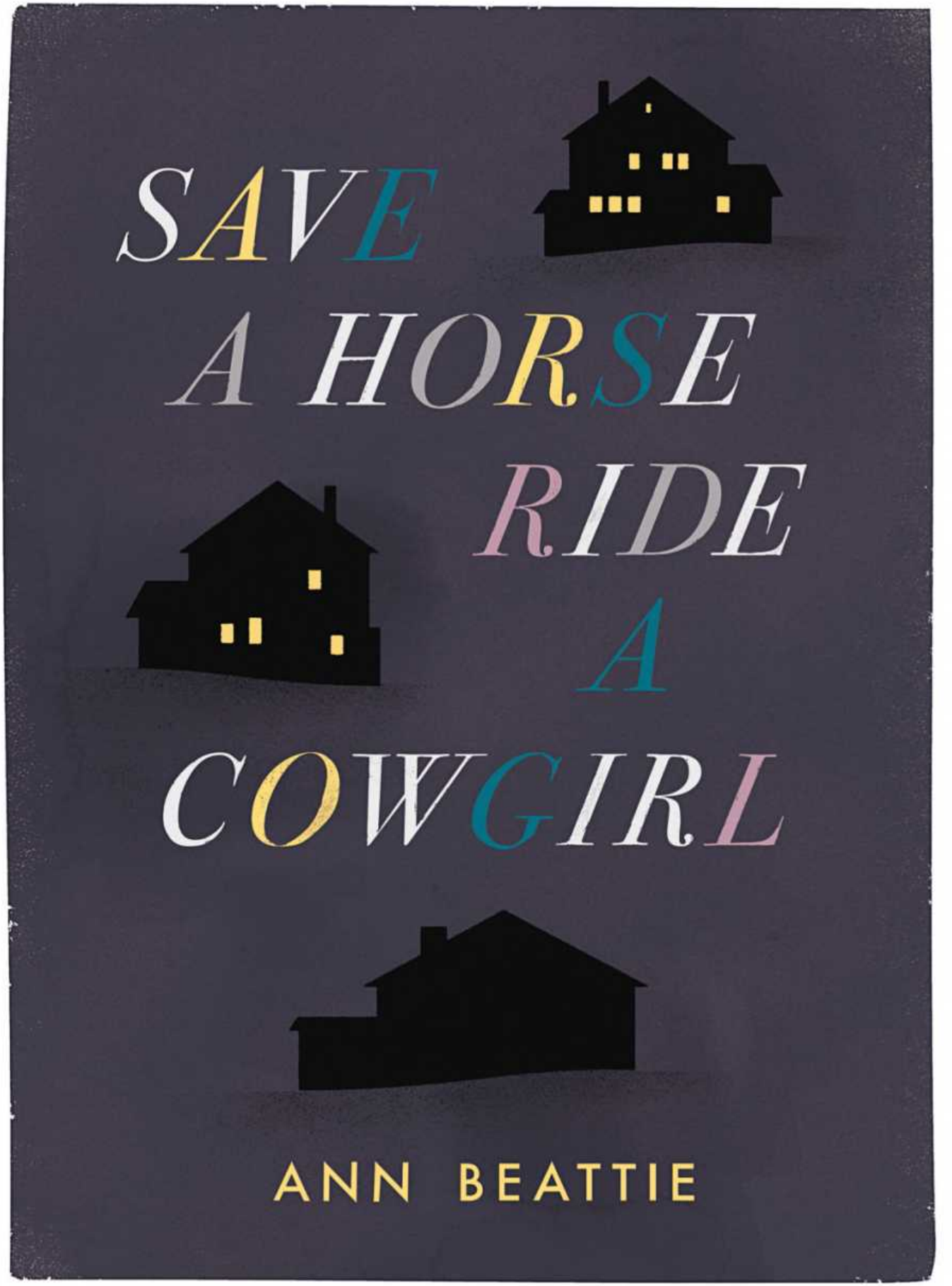


ILLUSTRATION BY THE HEADS OF STATE

Heidi and Bree were rear-ended on Route 1 by Sterne Clough, driving his brother's Ford pickup. Neither girl seemed hurt. Sterne, though, felt the oddest sensation. It was as if someone had clamped an ice bag under his right armpit. It felt frozen and burned at the same time. Your body pulled all sorts of tricks on you when you turned sixty, and now he was seventy-four, so those tricks were less like pranks and more like extended jokes. He groped under his arm with his good hand, but felt only sweat. Nothing accounted for the pain, which was worse in his knee. Damn! His bad knee had banged the dashboard when the little car in front had accelerated and then stopped with no warning, just as the light turned green.

He got out of the truck, his knee none too helpful. It was distracting to have to stand there scowling at the damage while his armpit felt like a smoldering coal. Maybe later he could run a bamboo stick through a piece of steak and cook it in there. Meanwhile, he had some awareness that the car's driver was still sitting in her seat, not even looking over her shoulder. The other girl stood by the mashed-in bumper of the car—at least the thing had a bumper—her hands on her hips.

"Are you too senile to be driving?" Bree asked Sterne.

"Want to tell me why your friend started off then stopped dead?" he asked.

"Because a squirrel ran across the road," Bree said. And because she's a total asshole, she thought, but she wasn't about to tell the guy that. They'd been headed to the outlets in Kittery to stock up on jeans, and maybe see if the Puma store had got in the shoes she'd seen in an ad earlier that summer. They both went to U.N.H., where the fall semester was about to start. Now this. Compounded by the fact that Heidi was currently outside the car, retching. Everything put Heidi in a tailspin, which was her way of insuring that she wouldn't have to take the blame for whatever had gone wrong: another girl threatening to attack Heidi for having stolen her boyfriend; the produce manager at the market irately insisting that she help him pick up the bin of mushrooms she'd sideswiped with her elbow. Now here came the cops, sirens blaring. A total shit situation.

Sterne's younger brother, Bradley, was a lawyer. Within a few hours, he was able to find out that, at the moment the squirrel dashed in front of the car, the driver was texting. That, and the year before she'd been on academic probation for physically fighting with another girl. Plus, she had an unpaid speeding ticket and had been cited in June for throwing a Coke can out of a car window. It had been observed at the scene that she was driving barefoot. "Turn that off," the cop had said of the music on the car radio, as Bree, not Heidi, complied with his request to see the car's registration, since Heidi kept gagging, as if she were finishing her last round of chemo.

Of course Bradley was upset that his brother had been involved in an accident, but a little damage to his old truck didn't bother him much. And a couple of phone calls had already guaranteed that Sterne was going to be fine. At worst, the insurance rates would go up. But it was 6 P.M. and Sterne was still fixated on the accident, cursing both girls as he helped carry the bookcase he'd been transporting into Bradley's new house.

Two years earlier, Bradley's wife, Donna, had been given the wrong medication at a hospital in Boston and had died as a result. He'd wanted to stay in their house, but the cliché was true. There were too many memories. With the settlement check, he'd bought a smaller place, across the river from their old house, in a location that Donna would have loved. He'd got rid of a lot of their books—her cookbooks, along with her collection of poetry books, which he'd donated to Smith—but he still had a few left, and the new house had no built-in bookcases or built-in anything, so he'd kept an eye out for useful shelving at Leeward Landing Thrift Store, where lovely furniture appeared at the end of each summer.

Sterne had borrowed the truck because he needed to buy several large bags of mulch, and had volunteered to pick up the shelf on the way. Almost every weekend, for one reason or another, Sterne borrowed the truck. He always brought it back with a full tank of gas, even if there'd been only a quarter tank to begin with.

In the house the bookcase looked smaller than Bradley had expected. They'd positioned it between the living-room windows that looked out toward the river, but now he thought that it might be better in the dining room, which had a lower ceiling and not much furniture. Decorating was not his strong suit. What he wanted, basically, was to get the remaining books shelved. Sterne had finally quieted down about the day's events and was assessing the bookcase with his hands clamped under his armpits.

"It doesn't look right there," he said.

"Maybe when it has books in it," Bradley replied vaguely.

"Where are they?"

"Upstairs. The movers carried all the boxes up to the second floor by mistake."

"Why didn't you make them carry them down?"

"I wasn't here. I had a trial. Margie Randolph's niece came over to supervise. She needed the money, because her babysitting job disappeared."

The Randolphs, Bill and Margie, had been Bradley and Donna's neighbors on Seagull Way. Bradley and Donna had had the corner lot, which gave them the advantage of great air circulation as well as a peek at the harbor. Their next-door neighbor, Miller Ryall, had spoken to no one, and no one had spoken to him, though his house sat between the Cloughs' and the Randolphs'. It was said that after losing his job on Wall Street, Ryall had sold his New York condo and moved his family into their summer house, though the wife, Constance, had quickly decamped with their two-year-old son and the Haitian nanny, and Miller had now lived in the house alone for years. He kept the blinds closed, though sometimes in the evening he walked barefoot onto the front porch and sat in the porch swing, bare-chested and wearing his bathing trunks (although the pool no longer contained water), revealing the same perfectly sculpted body that the wives had all noted when the Ryalls first moved in.

Through Donna's binoculars, which she had used to watch birds, Bradley could clearly see their old house. Maybe it was a little maudlin, but he liked watching his old home disappear into

the darkness every night, and he liked equally well the interior lights on either side of the second story that came on at dusk and remained lit until 10 P.M. He was asking a lot for the house and was not inclined to come down on the price.

"What say we check out that new oyster place in Portsmouth?" Sterne said. "I hear they've got twenty local brews on tap, and I owe you, after crashing your truck into bimbos. It's on me, bro."

Odd that Sterne had become obsessed with beer in his old age. The same substance he'd disdained in college—all three colleges he'd attended, starting with Michigan and ending with Bates, and not even a degree to show for any of it after seven chaotic years. Neither alcohol nor food held much attraction for Bradley after Donna's death. He just ate to keep going. But it was a nice offer—an apology and an attempt to cheer him up, no doubt—so he said jokingly that, if Sterne would drive, he'd enjoy such an outing very much.

"You don't enjoy anything very much, but a few oysters and a brewski might help you get back on your feet," Sterne said.

"Back on my feet? Do you remember that I won a trial last week that was a grand slam? I can pick and choose any case that interests me."

"You want to avoid the subject. That's fine. Not my place to nose in. I'm only thinking of you. Nobody knows what to do for you, me included."

"Nobody has to do anything. Life goes on."

"I don't think you think it does," Sterne said, "but I'll keep my big yap shut."

Portsmouth was sort of a nightmare, though they found a parking place in a bank parking lot where somebody had taken down the chain. Bradley felt sure they wouldn't be towed. They started off toward the center of town, a boy on a skateboard clattering the wrong way down a one-way street as a couple of girls watched. What tattoos they had. What crazy earrings, feathery hippie things that hung to their jawbones. One had on a necklace of black skulls. The other wore flip-flops on her enormous, hennaed feet. "Make way for two old men," Bradley said, using his arm, Darth Vader style, to cut through a cluster of boys who were smoking and holding their iPhones to the sky, jostling one another, checking out the girls. Sterne remarked on how much Portsmouth had changed. Bradley had to agree with him. In Prescott Park, a wedding was concluding, two little girls in lavender skirts so long the material almost tripped them as they threw flower petals everywhere they shouldn't.

At the restaurant, the brothers were told that there was only a half-hour wait if they were willing to sit at the bar. Sure. What was half an hour? They sat on a stone wall with the buzzer the hostess had given Sterne. Bill Randolph and his daughter from his first marriage wandered over to greet them. A nice girl. Peggy? Patty. She lived somewhere far away, like Newfoundland. Somewhere Bill had to take a ferry to get to. Margie was attending a therapy session. She'd insisted that they go out and enjoy the lovely summer evening; she'd even thought to make a reservation for them at Mombo.

When Bill and his daughter first approached, Sterne had hopped down off the wall to greet them, as if *he* were the former neighbor. Bradley had got down, too—rude to sit there like Humpty Dumpty—but although he was glad to see Bill, he didn't really know what to say. Bradley didn't think this daughter had ever married, and he wondered if she might be gay. Her hair was cut like a man's, though many women her age wore their hair that way. He'd need another clue. Which would be what? A T-shirt emblazoned with the rainbow flag? Yes, he did think she was gay, standing there smiling a big, un-lipsticked smile, her feet, in Tevas, planted far apart. Donna would have figured it out in a flash, but there was no Donna, no flash.

Bill said that he missed having Bradley close by. Not that he'd moved far, but still, with him gone, there was only crazy Miller Ryall and all the noise he was causing.

"What's that? Noise from what?" Bradley asked. It was some sort of adult jungle gym that he was constructing, Bill said. The swimming pool was still intact, but it had a different lining. Bill could see only a sliver of it from his attic window, peering through Tarzan's jungle. (Ryall had wisteria growing on arbors all over the property, plus trumpet vines and roses that made his front door all but invisible.)

Eventually, they took their leave, Patty clomping, Bill quite demure beside his big-boned, fortyish daughter. Sterne picked up the suddenly madly flashing, vibrating black box and held it as if it might explode. Bradley found himself hoping that there wouldn't be loud music they'd have to try to talk over, though sitting at the bar was good, in that situation. They'd be close together. Donna . . . she could hear a whisper across a room. No, of course she couldn't if someone was blaring music, but in the silence of the house she could hear—really—she did once hear the sound he made while using a toothpick on his back teeth behind the closed bathroom door.

Oysters, yes. Fried calamari. An order of steamers. They ate so much they decided to share a main course. Sterne ordered a hard cider. Bradley agreed to another T.&T., even though the tonic had been borderline flat. It was a fine idea, coming to the new restaurant. The noise level was atrocious, but after a while you got used to it. He felt proud of himself for knowing that it was Macy Gray on the sound system. Interesting to observe this summer's fashions: clothes splashed with orange; cashmere scarves carried so that you could bundle up in the A.C. Bradley knew the difference between cashmere and other wools. On their long-ago trip to India, Donna had bought the loveliest cashmere shawl. His secretary had taken Donna's clothes away, promising she'd donate them. Somewhere tonight, someone else could be wearing one of Donna's dresses. How bizarre would that be, to see another woman in Donna's clothes.

They decided on grilled swordfish with a mango compote ("compote" basically meant a little cup containing not enough of a substance), French fries, and lemon-peel arugula "slaw." Why the menu put the last word in quotation marks was open to interpretation. When they'd finished eating, Sterne grabbed for the bill. Bradley had wondered if his brother really would pay for dinner, or if he'd expect Bradley to insist on picking up half the check.

Bradley dropped Sterne off at home and took his leave. At his own front door, he turned on the hall light, then turned it off again and stared into the house, wishing that he could feel the

new configuration of hallways and stairs and rooms. In the old house, he could have maneuvered well even if he'd lost his sight—it was all so familiar. He turned the light back on and went into the living room and sat facing the windows, though he could see nothing through them. Well, now he could have things his way: no blinds, no curtains. He sat there trying to make up a little jingle, but nothing seemed to rhyme with "curtains." Exertions, maybe? Lately, everything seemed to require twice the energy it had when Donna was alive. He closed his eyes but didn't sleep. That would have been depressing: falling asleep after a big dinner, sitting alone in his living room. He sprang up, switching on the table lamp, but didn't know what to do next.

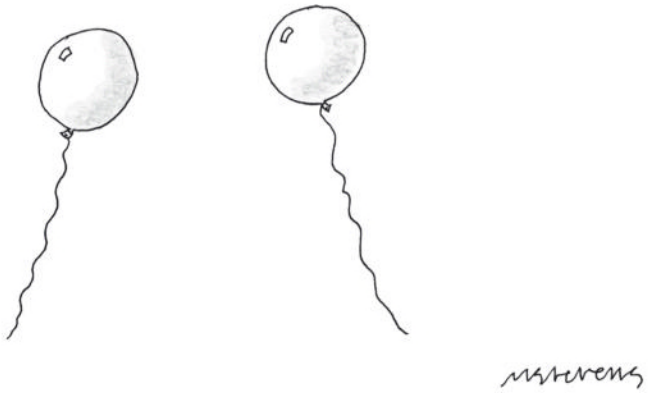
He decided to get the iPad and look up the pictures he'd taken the week before, when, with almost no warning, the temperature had dropped and hail had begun to come down—hail the size of mothballs—a totally bizarre August hailstorm in southern Maine. When it finally stopped, he'd taken pictures of hailstones filling the birdbath and the recycling bin, like Styrofoam peanuts. It had done in his new hostas. According to a phone call from Margie, Miller Ryall had come out on his front lawn during the storm, wearing Jockey shorts, not even bathing trunks, raised his hands to heaven, and laughed and danced like some deranged freak on "Twin Peaks," whooping and pirouetting. She'd taken a picture of that, through her front window. Bill was already joking about using it for their annual Christmas card. Now Miller Ryall was building . . . what was it? Something with high crossbars and netting slung beneath, a weird exercise system where the pool used to be. It sounded like a contraption Bradley might have seen in Vietnam, either for the troops to exercise with or, more likely, to torture prisoners.

He replaced the iPad on top of the bookcase and popped open a can of seltzer. He should review the long message a client had sent him earlier in the day—he knew he should—but the weekend was coming, and that would be soon enough. He sorted through some mail, threw out half of it unopened, took another sip of seltzer.

I am dull, he thought. He knew he was. But there was something to be said for not feeling conflicted or tortured, just empty. Done in. He picked up the binoculars and looked at his old house. It must now be past 10 P.M.—yes, it was—because across the river his upstairs lights had gone dark. Aiming the binoculars downward, he saw two figures swaying. At first he thought he was seeing low-hanging tree branches. But, no, out in front of his old house two people were dancing down the middle of the street. Of course, this was impossible. The entire block was asleep. So what was he looking at? It was Ryall. The stars cast enough light that he now saw Ryall's long, thin nose highlighted—but who was the woman? On the same day he'd found out about the adult jungle gym, he was now seeing the reclusive Miller Ryall dancing outdoors with some woman? He thought about calling Bill and Margie, but didn't want to wake them. Also, he didn't want to seem to be fixated on his former neighbor, because . . . well, because he disdained Ryall.

He finished his seltzer, peed, and undressed, draping his clothes on the bedpost. The next day was Saturday, so he'd wear them a second day. He'd go to the market and buy a few locally grown, healthy things. Take care of himself. You had to at least contribute to a depression's lifting. You couldn't just stare into the darkness with binoculars, looking at your old life, or at foolish people outside your old house, which you once occupied with your wife, your wife who was killed by an inept twenty-five-year-old nurse. What the hell was Ryall doing, though? The guy usually stayed hidden like a rabbit in its warren. And all that construction noise certainly wasn't going to help sell his house. Not that Ryall ever thought of others.

Bradley turned back the covers and slid into bed. He'd be up in two or three hours to pee. That happened when you drank: you thought your bladder was empty, but it filled up as soon as you lay down. And he'd had seltzer on top of the drinks. And ice water at the bar. He was never going to sleep, he thought. It was his last formed thought of the night.



"I have this crazy dream in which I'm the star of the Thanksgiving Day Parade."

• •

"In a million years, you are never going to believe what I have to tell you," Margie said to him at the market the next day. He was standing there with kale sprouting upward from his bag like green fireworks. The tomatoes weren't well enough cushioned at the bottom. They'd bruise. Perhaps the skin would break. He'd also bought a bunch of flowers, because some kid was trying to raise money to go on a trip with the high-school orchestra. They were things you'd find alongside any road: Japanese knotweed, Queen Anne's lace, and some limp-stemmed vine with a few dark-purple flowers that would probably drop off immediately. He looked at Margie neutrally, though he was eager to hear what she had to say. He'd cultivated this blank expression for the courtroom, and over the years it had become incorporated into his response to almost everything.

"Ryall's got a live-in girlfriend," she

"I didn't know you had a minor."

• •

said. "He met her through Match.com. She waved to me and walked right over and introduced herself. I was seeing my niece off, and suddenly she held up a hand and ran over, so of course I had to shake it. Her name is Bree. Daniel is her middle name. You'll never believe this: she was named for some woman in an old movie starring Donald Sutherland."

" 'Klute,'" he said.

"Cute? Well, I wouldn't say so—but with him the presence of any woman is cause for wonder."

"No, no. The movie 'Klute.' Jane Fonda played the woman. She was a prostitute, I think. Go on, Margie."

"She told me she was working at a store in Portsmouth, so she got a discount on the clothes. She was wearing a very swirly skirt that looked expensive. She'd dropped out of school and was going to be living next door. She brought up Match.com. I almost asked her if she knew that he didn't speak to any of us. But then I thought, No, she'll find out soon enough. That is, unless he's decided to be a human being. Isn't that amazing?"

"I suppose it is. Do you think there's any connection between the contraption he's having built and his new girlfriend?"

"You were born to be in your chosen profession, Bradley. That's an interesting question. You're thinking she might be an acrobat or something? One of those high-wire performers?"

He splayed his hands to pantomime not knowing. ("Stop pretending I'm a jury. I'm your wife," Donna would have said if he'd gestured that way in her presence.) He'd been tempted to tell Margie about what he'd seen the night before, but he couldn't imagine what she'd think of him, just happening to have binoculars, just happening to see the first real sign of life at Miller Ryall's in whatever it was, ten years. Also—and this was the real reason he decided not to say anything; he was quite aware that Margie wasn't likely to judge him—he'd awakened that morning with a very disconcerting thought. A really troubling thought that for a few seconds he'd felt entirely convinced of. Shaving, he'd continued to think, Maybe it was Donna. Maybe she came back, and I wasn't there—there was only Ryall—so she had her elegant, life-affirming dance with him. Such a thought was odd, he knew, even as he thought it. Yet it lingered, and he'd already decided that he'd jump in the car if he saw dancing again.

Now, after time had elapsed and he'd had two mugs of coffee, it occurred to him that the idea had popped into his mind because of some of the stories he'd heard in Vietnam—bizarre things that the Vietnamese believed about ghosts who could be seen only for as long as you looked at them, who vanished if you so much as blinked. By implication, the Americans were not only killing but blinking people away. Blinking them back into invisibility. He'd heard this from a nine-year-old boy who'd befriended him. He wondered what had happened to that boy, with his bloody knee and broken thumb, splinted with a tree branch, while at the same time he knew. That whole village had disappeared, though not while he was there; its end was not something he'd had any part in.

He and Margie parted after a peck on the cheek, and he started down the well-trampled hill with his bag of vegetables he didn't really know how to cook. He should have kept at least one of Donna's cookbooks. He'd boil water and drop the stuff in. The corn would cook just fine, and if the kale wasn't edible he'd know better next time. The Queen Anne's lace was dropping tiny flecks of white, like dandruff, on his car seat.

He drove out of the lot, a stream of tourists' cars facing him at the intersection by Stonewall Kitchen, where they came off the highway. Maybe he should invite a tourist over for dinner. He could be like the squeegee men in New York City, setting upon drivers stopped at lights, rubbing filthy water over their windshields and demanding tips. But he would ask them to dinner instead. After all, in a world where people met their life partners on something called Match.com, what would be the harm in accepting a mere dinner invitation? Free food!

Kale boiled with corn. Sliced tomato sprinkled with garden basil. He also had a package of chicken sausages. Sure, come on, happy summer people, enter into life as it's really lived in Maine! The idea was starting to amuse him even as it made him feel horrible, like a condescending, ill-tempered human being.

To his surprise, he found that he had driven not to his new house but to the old one. When he saw where he was, he couldn't remember how he'd got there. On autopilot, that was how. Abashed, he pulled into his driveway, only to find himself fenced in: Emil Andressen, his real-estate agent, had pulled in behind him in a silver Lexus, transporting a couple of potential buyers. Bradley got out with a faint, false smile. Emil was not happy to see him. This was bad timing. He'd been warned: buyers wanted to see nothing personal inside a house, no framed pictures, no scraggly plants, no memorabilia—and certainly not the owner. They needed, according to Emil, to have no obstacles to imagining themselves there. Anything could throw them off and ruin their imaginative projection—even the wrong fabric on furniture.

So, then, why had Emil blocked him in? Why hadn't the man at least parked at the curb, or where a curb would have been, had one existed? The second he realized he was angry, another thought occurred to him: Bree? The Match.com girlfriend was named Bree? How many Brees could there be? What would it mean if it was the same young woman whose car his brother had hit in the fender bender? Could it be that small a world?

"Awfully sorry," he managed to say to Emil. "I was just going to take a look around, make sure everything was O.K."

"Are you the owner?" the woman said, throwing open the car's back door. "If you are, will you give us a special tour of your lovely home? It's No. 1 on our list of places to see. We're hoping it'll be our forever dream house in vacationland!"

This squealing woman seemed disastrously stupid. The sort of woman he couldn't abide. Donna had been able to talk to anyone, but he had no facility for casual chatter. A forever dream house in vacationland?

Emil's body jerked, as if he'd been hit by a big wave he'd turned his back to. His scrawny arms were actually flailing.

"I'm sorry," Bradley said, addressing Emil rather than the woman. "Why don't you back up, and I'll go on my way, Emil?"

"Oh, no," the woman insisted. "Don't y'all think that is too silly, having everybody disappear, as if nobody owned the house, as if we couldn't possibly learn anything from y'all?"

Her husband, texting, got out of the car. He looked at Emil. "This is the house's owner, who lives across the river now," Emil said. "As he says, he was stopping by to check on things, but we should probably—"

"You should, but you've got me blocked in, Emil," Bradley said, more testily than he'd intended.

Emil was a former Tae Kwon Do instructor turned nurse's aide, as well as a part-time real-estate agent, supporting his girlfriend and her ten-year-old son. He was also a four-years-and-counting member of Alcoholics Anonymous. A friend of Bradley's—a twenty-year A.A. member—had recommended him when Bradley decided to sell the house. Why he hadn't listed it with Sotheby's he couldn't imagine, but he had only himself to blame.

"And what all is that?" the woman said, twirling to look at the couple dancing in formal attire up the road. It was not yet 10 A.M. God, they'd danced out from under the massive bowers of wisteria without a sideways glance and were doing a salsa, or something hippy and swivelling, up the middle of the road.

"Fred Astaire and Ginger Rogers," the woman said, grabbing her husband's arm. "We are gonna have to refresh our ballroom-dancing skills to live in y'all's neighborhood!"

"What's that about, do you know?" Emil said to Bradley, rather urgently. "A prank? They're playing a joke?"

The young woman dancing with Ryall had long dyed-blond hair and bony knees and wore black high heels with straps—official dancing shoes—and if everyone standing in the driveway was lucky she and Ryall would do their pas de deux around the block, and the couple would, indeed, assume that they'd been the victims of a practical joke. The dancing woman was so obviously not Donna—just some foolish girl, probably either drunk or stoned, enjoying her sudden romance with a guy who, out of a job or not, had big bucks and was putting her on big time by pretending to be up for anything, full of exuberance.

"Oh, I like this neighborhood already!" the woman buyer said, rising up and down on her toes.

Emil was backing up his car. For a quick second, Bradley caught his eye, and that glance said it all. It said, I am my family's only source of income. It said, Get out of here now. It said, I will lose this sale. It said, Jack Daniel's with two cubes and a cherry. Then it said, No, no, no.

"I have just got the best feelin'!" the woman said as Emil steered her toward the house. "Can't we even ask him if he was really happy here?" Bradley heard her say as the front door closed.

Had he been really happy there? Of course. Or, rather, his wife had allowed him not to think about such a question at all. They'd carved out days and never realized that they were limited in number. "Carved" days. Why had he used that word? He didn't know. He could "get in touch with his feelings," an expression he detested, if he had to. But to whom would he reveal them? Not Sterne, who was afraid of his own shadow. Had Donna not died, he wasn't sure they'd be close at all. There had been years in which they'd seen little of each other. His brother had also been in Vietnam, though his collapsed lung had got him sent home early. Sterne had been present for their mother's death, just as Bradley had been there for their father's.

As he pulled out of the driveway, he reversed so abruptly that the bag of vegetables toppled off the passenger seat and spilled onto the floor. He'd automatically reached out, as he had so many times to brace Donna when she'd sat there, but it wasn't her; it was only a bag of kale, tomatoes, and corn, all of it bought for less than ten dollars. At the stop sign around the corner, he leaned over and picked up most of the things, which seemed more ordinary and less fascinating now than they had at the market. The truck in front of him inched and braked, inched and braked, waiting for an opening in the traffic. A sticker on its back

window said, in big red letters, "SAVE A HORSE RIDE A COWGIRL." What was it with America and saving things? Yes, of course he got the slightly dirty joke. But, really, Americans felt they had to save everything from tadpoles to foreign countries. The argument was always that it was in their interest to do so; no one was naïve, no one a romantic. He supposed he should be thinking in terms of "we" rather than "they." He was, after all, an American, too.

A little girl peeked out the back window of the truck and waved just as the truck lurched forward, taking off with squealing tires and a backward spray of gravel. No crash followed. Now Bradley watched for an opportunity to accelerate, but no one was giving an inch. A steady string of cars stretched in both directions, drivers feigning obliviousness of anyone trying to enter the stream. He wondered if he would ever be able to make the turn, if any car would flash its headlights, or simply stop. Was there even one civilized person left on the planet? He felt he might sit there until he turned to stone or drew his last breath. Until he died of old age—which was, of course, better than dying of someone's ineptitude. These were the things that went through his mind as he sensed something bearing down on him from behind. His eyes flicked up to the rearview mirror. With that slight motion, he became conscious of a headache forming. Of course the idiots were continuing their dance, emerging from some clever shortcut, since he hadn't seen them turn onto the road leading to the stop sign.

Time passed. A convertible hesitated, but sped up when he removed his foot from the brake. Stone, he thought. Death. He and his car would be covered by the dust of time, just as his new hostas had been buried under the avalanche of hail. Eyes up! The couple was gaining on him, though he couldn't imagine—and hoped he wouldn't have to find out—whether they'd acknowledge his presence or merely dance around him. Were they completely in their own world? How much of it was a taunt? That had always been one of the crucial questions you needed to consider before you made a move in country: was something really happening, or was it a mirage, a hallucination?

The dancers came close, her smile lipsticked red. His crazy neighbor's eyes blazed. They'd dance around him. He was invisible, the car a mere shell. His sense that he was idling at a stop sign in his old neighborhood in Maine, where some middle-aged Southern belle was inspecting his house and oohing over Donna's Persian carpets, was just an illusion. He would exist only as long as the dancers didn't blink, and so far, wild-eyed and dishevelled, they seemed not to.

They were almost upon him when he finally had a chance to shoot into traffic. Eventually, the road would take him to his new house, just as years before a plane had lifted him out of Saigon: *Plunk*. There you go. Sweet dreams. Or, better yet, none at all.

How long could people dance that way? How far could you get, pushing yourself beyond exhaustion? He knew the answer. He'd learned it. He'd learned, also, that whenever you thought you were having your moment, life tapped you on the shoulder and cut in. That was the cruel blink of fate's eye. You were all wrapped up in each other, dancing? Oh, no, you don't get to do that.

SAVE A HORSE RIDE A COWGIRL had pulled into the local ice-cream stand. He gave a two-fingered salute as he

passed, in case the little girl was watching. It would have been nice to see her fine blond hair again. Her little fingers. But things didn't work like that. He was inside an anonymous car. He'd been only a moment's diversion for her. Still, he wiggled his fingers in imitation of the way she'd moved hers, remembering as he did the horrible Chinese bird spiders, bigger than her palm, the poisonous spiders for whose bite there was no antivenom—one of which had once so startled Callahan by springing out of his empty boot that he'd screamed and raced into Bradley's arms.

Another time. Another country. The stakes were so different now, though the old life-or-death thing still took its toll.

What would he dream, if he could determine his dreams? Years ago, he'd seen a man named Dr. McCall, who had asked him just that. The man had written with a pencil with a sharp point. He wrote only when something impressed him. It didn't seem very professional, in retrospect, that he had let his patient see how infrequently his pencil moved. "Oh, a nice trout stream with burbling water and leaping fish, and wading boots in the right size, for once, and clouds to block the sun but not the light," he'd said. No movement of the pencil. "Or the opposite: working in a skyscraper in New York City, beautiful women throwing themselves at me, the whole male-fantasy thing." Nothing. McCall had said, "You're just going with the usual all-American fantasy? You don't wish to banish any memory of the dead?" McCall sat behind his desk in a wheelchair. He was said to be the best shrink at Walter Reed. He'd once been a patient there himself, and he had a low tolerance for fairy tales.

"Any answer?" the doctor had persisted.

McCall must not have been married. In those days, shrinks were cagey: if it worked to wear a wedding ring, they wore it; if it didn't help, they left it on the dresser. Still, there was often the tell-tale white circle. What he wouldn't give for one more chance to look at the doctor's hand. But McCall had disappeared from the V.A. Maybe the guy had found his own trout stream. Maybe he was happily married to some woman who sewed his buttons back on and gave him a push uphill when he needed it. Back then, Bradley had been just one of thousands of Humpty Dumptys who needed to be put back together.

Now he wore Donna's gold wedding band on the chain from which he'd removed his dog tags. It dangled so low that no one could mistake it for a necklace. Not that he ever showed it to anyone. No one could have known

that the way the ring warmed up or cooled reminded him constantly of her. She'd been killed, as so many had, by friendly fire. That girl—the so-called nurse—was on Facebook. She was married, with a son and a daughter. He wished her nothing good: no dream answered, no summer vacation. A terrible illness, of the kind that so often ironically befell those in her profession, could not make her sick enough to satisfy him. His thoughts were nothing but uncharitable. And if her children grew up to fight in their own war? Well, it would certainly be sad if they never came home.

In his living room, he raised the binoculars and looked across the river. No sign of the dancers. Maybe—because his own life seemed to move so excruciatingly slowly—Miller Ryall and the girl were living in sped-up time. They had already married, had children, sent them off to college, attended their weddings, and were waiting excitedly for grandchildren, who'd come to play on the wooden contraption that could dangle them upside down for hours, or break their ribs if they sprang free.

The house sold for almost eighty thousand dollars more than the asking price. Bradley and Emil drank a Newman's Own lemonade at the ice-cream place to celebrate, sitting under a big umbrella. Emil was riding high, astonished at his good luck. "I don't know, man," he said, shaking his head. "I mean, it's funny now, but the two of us standing there, watching that weird mating ritual going on down the middle of the street? It's something I'll tell the grandkids, and we haven't even got around to having our own kids yet."

"Don't do it. Enjoy your lives with each other," Bradley said.

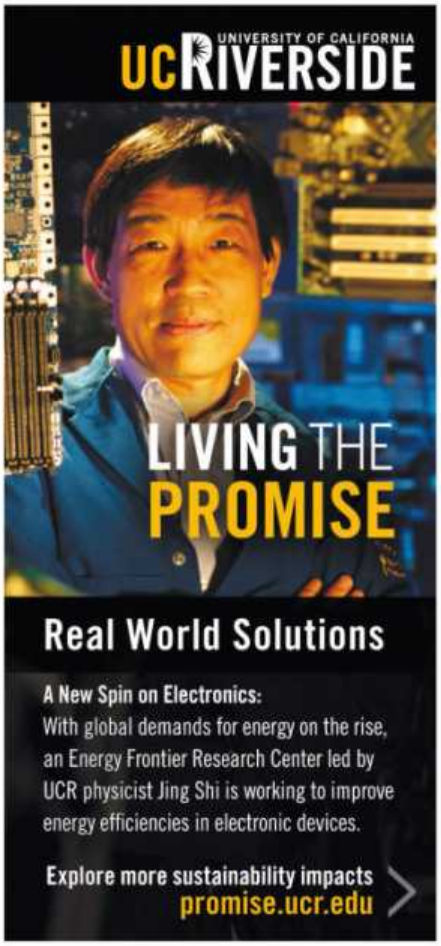
"Beg pardon?" Emil said.

He didn't repeat himself. Anyone who didn't want to hear didn't have to. His own brother never asked him any personal questions. Not about what had happened in the war, not about why he and Donna had never had kids (how would he dare ask that, since he'd never married?), not about his sessions with Dr. McCall. It was really cowardice that Sterne asked nothing. It almost made Bradley want to call his brother and force him to talk about those things, but his hostility was misplaced. His brother was a fuckup, and had been all his life. It had protected him from many things, so who was Bradley to say that it wasn't an effective defense strategy? Sterne couldn't speak Donna's name, but he forgave him for that.

Donna had never taken pleasure in anyone else's pain, but she might have been intrigued by the mental breakdown that resulted in their old neighbor's being carted off to the hospital. Emil had been there, working the night shift as a nurse's aide, when Miller Ryall was admitted, and he gave Bradley the details the next day. Bree had disappeared as quickly as she'd come.

"Why would we live on a street called Seagull Way?" Donna had asked him when they were young and they'd first made an offer on the house. She would have been surprised by the last-minute bidding war that drove up the price, and surprised as well that when Ryall's house was listed Bill and Margie moved instantly to buy it, later constructing an enclosed passageway that led from one house to the other. Bill's sister lived there for a while, following her stroke. But Donna would have thought Bradley silly for giving Sterne her expensive binoculars. He'd decided that he wanted to know less, not more, about his former life. He gave his brother the truck, too; he really didn't need it anymore. When he stopped returning Margie's calls, she stopped calling and only nodded if they crossed paths. What had he said to Donna when she'd asked that question about living on Seagull Way? He forgot so much. Not his feelings toward her, just what, exactly, they'd said. Maybe he'd answered, "Because that's what this pretty street happens to be called." Once it had seemed an unusually pretty street, safe, predictably quiet, a street where—even if some pride was involved in assuming such a thing—everyone else seemed worse off than they were. She had no doubt nodded in agreement. ♦

NEWYORKER.COM
Ann Beattie on how a bumper sticker inspired a story.



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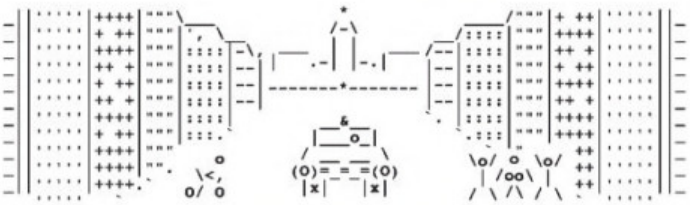

MUSICAL EVENTS

DESPERADOES

"Lulu" at the Met, "Spring Awakening" on Broadway.

BY ALEX ROSS

Benjamin Franklin Wedekind, the iconoclastic author of "Spring Awakening" and the Lulu plays, had trouble deciding whether he was German or American. His parents, a gynecologist and a singer, were German expatriates who met and were married in San Francisco, then returned to Germany just before Wedekind was born in 1864. Although he never set foot in America, he purveyed a vaguely American style, going by Frank and adopting a streetwise look. Scholarship suggests that his attitude toward his lost homeland wavered between admiration and contempt: he prized the ideal of a free, open society, yet excoriated the greed and folly to which that society seemed prone. His work remains relevant. The Metropolitan Opera is presenting a new production, by the South African artist William Kentridge, of Alban Berg's 1935 masterpiece "Lulu," while Steven Sater and Duncan Sheik's 2006 musical adaptation of "Spring Awakening" is back on Broadway, in a version by the Los Angeles company Deaf West. In both works, as in the source plays, characters speak of fleeing to America as disaster looms. Countess Geschwitz, Lulu's lesbian friend, proposes that they abscond across the ocean; the flailing schoolboy Moritz Stiefel begs for money to make the trip. America is the final illusion of sinking souls.

Wedekind is celebrated for his unprecedentedly blunt approach to sex. Beginning with "Spring Awakening," which was written in 1891 but not staged until 1906, he addressed teenage lust, masturbation, same-sex desire, abortion, rape, and *Lustmord* ("lust murder"). His assaults on bourgeois decorum aside, Wedekind was one of the architects of modern drama, helping to forge Expressionism and definitively influencing Brecht. Savagely realistic dialogue is cut up and shuffled into chilling non sequiturs. Berg preserved this in the libretto that he fashioned from the two Lulu plays, "Earth Spirit" and "Pandora's Box." In Act I, Dr. Schön, the wealthy newspaper editor who cannot resist Lulu's spell, sputters invective: "You angel of death! . . . You hangman's noose!" She blithely answers, "How do you like my new dress?" The "Spring Awakening" musical strays further from its source, but dark chunks of Wedekind remain, notably when the naïve schoolgirl Wendla asks Melchior, the sensitive rebel hero of the piece, to beat her with a switch. His almost instantaneous transformation into a brute screaming "Bitch!" is as frightening now as it was a century ago.

Needless to say, there are huge differences between the two adaptations, and not only where musical language is concerned. Sater and Sheik have framed "Spring Awakening" as a familiar saga of frustrated youth, of lusty adolescents defying repressive parents and despotic teachers. The rock-and-roll flavor of Sheik's score accentuates the show's resemblance to misunderstood-teen-ager narratives of the "Rebel Without a Cause" type. In part, this appropriation is accomplished by way of heavy-handed revision; in the original, Melchior rapes Wendla, whereas in the musical the sex is consensual, almost sacred. But to present "Spring Awakening" as an ode to a nascent youth culture hardly betrays the text. Wedekind, who sang in cabarets, accompanying himself on guitar, might not have entirely hated this punchy, all-American take on his play.

The Deaf West production—which is playing at the Brooks Atkinson and is directed by Michael Arden—pairs singer-actors with deaf performers who communicate via American Sign Language. As a result, the musical gains unexpected force. The easy spectacle of attractive young people dashing about the stage gives way to something more fraught and elemental, as the signing performers hold their own against the singing ones. The most wrenching moment is silent, as Moritz, played by Daniel N. Durant, prepares to commit suicide. He signs lines based on Wedekind, as supertitles appear behind him: "Ten minutes ago, you could see the entire horizon. Now, only the dusk. The first few stars. So dark." His existential solitude is at once particular and universal: it invites sympathy for all outcasts.

The Wedekind who wrote the Lulu plays, in a fitful process that lasted from 1892 until 1913, had rid himself of all sentimentality. Although embers of innocence still glow in "Spring Awakening"—notably, in the remarkable scene between the smitten schoolboys Hans and Ernst—in Lulu's realm love leads inevitably to catastrophe. She mesmerizes a string of men and women, most of whom meet bad ends. Her nemesis arrives in the person of Jack the Ripper—a scene that has not lost its capacity to appall, even after a thousand slasher films. The eternal term-paper question is whether Lulu is being presented as the victim of a male-dominated society or whether her sexuality is being misogynistically blamed for all the mayhem. One can find evidence

ABOVE: JENNIFER DANIEL

Marlis Petersen has portrayed Lulu in ten productions of the opera. At the Met, she is at once girlishly innocent and predatory.

PHOTOGRAPH BY JEFF BROWN

for both readings, and Wedekind's conception of the character changed as he struggled to accommodate censorship and bring the plays to the stage. The fundamental idea, which is reflected in Kentridge's production of "Lulu," is that she becomes a screen onto which her admirers project conflicting images. The story begins with the painting of her portrait, and, to the artist's frustration, her expression cannot be fixed.

Berg, one of many fin-de-siècle German and Austrian youths who were spellbound by Wedekind's plays, felt no obligation to clean up the material. He made drastic cuts as he assembled the libretto, but they only heighten the impact. Indeed, they result in brilliant new bits of grotesquerie. In Act I, dialogue involving Lulu's first husband, Dr. Goll, is hacked away, leaving the poor man with only three words: "You dogs!—You . . ." He has discovered Lulu in the arms of the Painter, and falls dead of a heart attack. When "Spring Awakening" finally reached the stage, Wedekind complained that it was being treated too solemnly. Berg's "Lulu" is a work of daunting complexity and crushing intensity that also succeeds in being funny. At the Met, laughter repeatedly rippled through the house, the mounting horrors notwithstanding.

Still, Berg couldn't help remaking "Lulu" in his own image. Although he employs a host of modern devices—not only Schoenberg's twelve-tone method but also hints of cabaret, ragtime, jazz, and Kurt Weill—the dominant presence is a kind of supersaturated crypto-Romanticism that sounds, as Theodor Adorno once said of Berg's music, like Mahler and Schoenberg played simultaneously. That description particularly applies to the grandly yearning themes that Berg wrote for the love of Dr. Schön and Lulu and for Lulu's reverie of freedom. There is no counterpart to these outbursts in Wedekind. Likewise, at the very end of "Pandora's Box" Geschwitz declares that she will be with Lulu through all eternity; then she exclaims, as she dies, "*O verflucht!*" ("Damn it!"). Irony flattens her lofty sentiment. Berg is too much the Romantic to surrender the hope of infinite longing. He drops the exclamation and lets Geschwitz's rhapsodic lines float into the ether, even as a fateful heartbeat rhythm sounds in the orchestra.

The old Met production of "Lulu," by John Dexter, served the opera beautifully for years, exuding a decrepit, off-kilter splendor. I felt a certain trepidation when Kentridge was announced as the director of the new "Lulu," since his previous Met staging, of Shostakovich's "The Nose," struck me as visually dazzling but psychologically inert. There is no opera more psychological than "Lulu." The early scenes don't bode well, as Kentridge sets in motion a busy array of projections: newsprint, dictionary entries, Rorschach inkblots, videos of a hand making brushstrokes, woodcuts of early-twentieth-century German and Austrian figures (including one of Berg). Meanwhile, two mime figures, a pianist and a butler, execute rubbery contortions onstage. At first, the singers seem lost in the mix, doing little more than gesturing and standing in place. Later in the opera, though, the collages find dramatic purpose. As the images cascade over walls and partitions, they create flickering, filmic spaces in which the action can unfold. We are led into an unstable dream world where identity is in constant flux. Especially striking is the treatment of Lulu's death: brushstrokes obliterate a woodcut of her face, suggesting the splattering of blood. We see the blotting out of the woman who has always been captive to men's images of her.

The German soprano Marlis Petersen, a great Mozart singer, has performed in ten productions of "Lulu." She has announced that this will be her last, and she is going out in high, gaudy style. On opening night, she kicked her legs and leaped about on furniture with an alacrity that would have suited the athletics of "Spring Awakening." At the same time, she gave a precise, lyrically pulsing account of the vocal part. Her Lulu is at once girlishly innocent and predatory, reflecting Wedekind's equivocation. Matching her in energy was the Austrian bass-baritone Martin Winkler, who plays the Animal Trainer and also the acrobat Rodrigo. Flapping his arms, slapping his bald head and his exposed paunch, Winkler brought a vaudeville menace to the proceedings, entirely in the Wedekind spirit. Johan Reuter, as Dr. Schön, and Daniel Brenna, as his son Alwa, might have benefitted from more decisive direction, but both sang with clarity and vigor. Paul Groves was a strained but potent Painter. The veteran baritone Franz Grundheber gave unusual heft to Lulu's ancient friend Schigolch; Susan Graham brought unusual lustre to Geschwitz.

James Levine had been announced as the conductor of this production, but he withdrew earlier this fall. Lothar Koenigs, who is the music director of the Welsh National Opera, has stepped in for the first five performances (including the Live in HD broadcast, on November 21st), and on opening night he elicited a fresh, lucid, convulsive account of the score. Levine habitually emphasized the Wagnerian-Mahlerian aspect; Koenigs muted some of the lushness, focussing on incisive rhythm and songful phrasing. Berg's sublime monster of a score became an unexpectedly lithe creature, almost musical-theatre-like in passing moments. It packed a monumental wallop all the same.

Koenigs was not always perfectly faithful to the score. Among other things, he altered the dynamics of those chords of fate in the final bars. In the "Lulu" score, the brass is marked mezzo forte and the percussion is marked piano; here we got a grimly roaring sound, with a deadly thud to close. But the change brought us closer to the source—to Wedekind's pitiless vision of humanity, which, more than a century on, we still have trouble looking in the face. ♦

CONSTABULARY NOTES FROM ALL OVER

From the AP.

A North Reading woman called police Saturday from her upstairs bedroom to report that she heard loud banging noises downstairs and feared someone had broken into her home.

Officers who responded found no sign of a break-in.

But during a quick search of the home, police found a soot-covered wood duck.

Police say it appears the duck got in through the chimney.

An officer caught the duck and released it into a nearby pond.

A CRITIC AT LARGE

WRITERS IN THE STORM

How weather went from symbol to science and back again.

BY KATHRYN SCHULZ

"No weather will be found in this book," Mark Twain declares in the opening pages of his 1892 novel "The American Claimant." He has determined to do without it, he explains, on the ground that it usually just gets in the way of the story. "Many a reader who wanted to read a tale through was not able to do it," he writes, "because of delays on account of the weather."

Twain was not alone in mistrusting meteorological activity in fiction. As literary subjects go, weather has a terrible reputation. More precisely, it has two terrible reputations that do not get along. On the one hand, weather is widely regarded as the most banal topic in the world—in print as in conversation, the one we resort to when we have nothing else to say. On the other hand, it stands perpetually accused of melodrama. "It was a dark and stormy night," begins Edward Bulwer-Lytton's 1830 novel "Paul Clifford," which goes on to invoke torrential rain, gusting wind, guttering lamplight, and rattling rooftops: weather as plot, setting, star, and supporting cast of what is, by broad consensus, the worst sentence in the history of English literature.

Melodramatic or banal prose mostly gets blamed on the author, reasonably enough. But melodrama and banality are aesthetic judgments, and, as such, they are sometimes also products of their context. Twain was writing in the late nineteenth century, a time when the field of meteorology was belatedly coming into its own. With that scientific model of weather in ascendance, the literary models came to seem suspect. Weather facts served to make weather fictions seem overwrought, while the newly empirical understanding of the atmosphere—and, more staggering at the time, the ability to predict its behavior—made weather itself seem suddenly more prosaic.

That was the context in which Twain joked about eradicating weather from his work. But even he conceded that "weather is necessary to a narrative of human experience." Through the ages, we have used weather in our stories to illuminate the workings of our universe, our culture, our politics, our relationships, and ourselves. Before "The American Claimant" was published, sans weather, you might as easily have searched the canon for a novel without adverbs. Twain was likely correct when he called his weatherless book "the first attempt of the kind in fictitious literature."

Twain died in 1910, too soon to discover that his joke turned out to be borderline prophetic. After maintaining its centrality in Western literature for millennia, weather, while by no means vanishing entirely, faded in importance in the twentieth century. Only in our own time are we seeing it return in significant ways to our stories—thanks, as it happens, to the same forces that drove it away in the first place.

Storms sent to punish, lightning to frighten, thunder to humble, floods to obliterate: across nearly all cultures, the first stories that we told about weather were efforts to explain it, and the explanations invariably came down

ILLUSTRATION BY AUDE VAN RYN

to divine agency. From the bag of winds gifted to Aeolus to the Biblical drought visited on Jerusalem, meteorological phenomena first appear in the narrative record as tools used by deities to battle one another and to help or hinder humans.

Early religions distributed those tools profligately. In Greek mythology, the wind alone was apportioned among more than a dozen gods, goddesses, nymphs, and demons—to say nothing of Zeus, who ruled the sky, and Poseidon, who could stir up storms. But, with the rise of monotheism, dominion over the elements was consolidated into a single God, and bad weather, like suffering and death, became one of those things which we brought down on ourselves through sin. In Eden, the climate was perfectly temperate. Only after the banishment of Adam and Eve did God—in the words of Milton, in "Paradise Lost"—"affect the Earth with cold and heat / Scarce tolerable," and summon "ice / And snow and haile and stormie gust."

Meteorology would never entirely shed these religious undertones; even the eminently dry and secular field of contract law continues to call an unexpected weather event an "act of God." But by the time that Milton was writing, in the mid-seventeenth century, the role of weather in literature was shifting. While our earliest weather stories tried to explain meteorological phenomena, subsequent ones used meteorological phenomena to explain ourselves. Weather, in other words, went from being mythical to being metaphorical. In a symbolic system that is now so familiar as to be intuitive, atmospheric conditions came to stand in for the human condition.

That symbolic use of weather is the subject of Alexandra Harris's "Weatherland" (Thames & Hudson), a forthcoming history of weather in English literature. "My subject is not the weather itself," she writes, "but the weather as it is daily recreated in the human imagination." Her survey begins with an astute observation: weather works so well as a symbol partly because its literal manifestation is oddly slippery. "Meteorological phenomena are serially elusive," she writes. "Winds and air-fronts reveal their characters only in the effects they have on other things." A breeze sends smoke drifting northward from a chimney; a thermal betrays itself in the effortless upward trajectory of a hawk; low temperatures make themselves visible as our breath hanging in the air. Weather, one of the most potent forces in our lives, is often imperceptible, perpetually changing, and frequently mysterious.

As Harris points out, all of this makes it a convenient substitute for another "serially elusive" phenomenon: the self. King Lear, Shakespeare tells us, was "minded like the weather"—as charged and turbulent as the storm that raged around him on the heath. In a way, we have all been minded like the weather ever since, so accustomed have we become to using meteorology to describe mental activity. Minds are foggy (unless they are experiencing a brainstorm), temperaments sunny, attitudes chilly; moods blow in and out. Wordsworth wandered lonely as a cloud; Robert Frost, in "Tree at My Window," explicitly compared outer and inner weather. Harris draws particular attention to the association between minds and clouds, from the cumulus shape of the cartoon thought bubble to the early Christian belief that Adam's mind was made from a pound of clouds. She might also have cited Sartre, who memorably described consciousness as "a wind blowing from nowhere toward the world."

As a set of symbols, weather also blows toward the world; we use it to describe not only ourselves but our private relationships and our societies as a whole. Nabokov characterized his marriage to Véra Slonim with a one-word emotional-weather report: "cloudless." Emily Brontë conjured the opposite kind of relationship in "Wuthering Heights." When we first meet Catherine Earnshaw, she is a ghostly hand rapping on a window in a storm—which is to say, she is essentially the storm itself, rattling the glass panes of her former home. At every point thereafter, emotional drama and atmospheric drama are one. If Lear is minded like the weather, Catherine and Heathcliff are bodied like it—together, the most famous storm ever to strike the Yorkshire moors.

Six years later and two hundred miles to the southeast, Dickens summoned vastly drearier conditions for "Bleak House"—which, outside of the Book of Revelation, might have the most consistently dreadful weather of any work of Western literature. "It rains for the first twelve chapters," Harris notes, "before pausing and raining again." The skies are further blackened by soot and smoke—in Dickens's words, "gone into mourning, one might imagine, for the death of the sun." Fog smothers the city. The mud is so abundant that it is "as if the waters had but newly retired from the face of the earth"; in what may be the only dinosaur cameo in Victorian literature, Dickens imagines a forty-foot Megalosaurus slogging through it up Holborn Hill.

Much of this (though not the dinosaur) reflected a reality of contemporaneous London, where clouds mixed with soot from the unregulated chimneys of

"Think of it as a video game where you score points for responsible driving."

the early industrial era to darken clothes, lungs, and skies. Yet the weather in "Bleak House" is unmistakably symbolic: the mud is that of a hopelessly sullied culture, the fog that of an opaque and unnavigable legal system. As in earlier, religious stories, meteorology here is morality, and the prevailing conditions leave everything hidden, murky, and stained. Lest anyone miss the point, Dickens names his saintly heroine Esther Summerson.

This kind of heavy-handed meteorological symbolism was not to everyone's liking. To be specific, it was not to the liking of John Ruskin, the most influential critic in the nineteenth century. In 1856, in the third volume of "Modern Painters," Ruskin criticized writers for attributing human emotions to the natural world, a tendency that he famously termed the pathetic fallacy. ("Pathetic," in this context, refers to pathos, and the fallacy to something sham; the phrase might best be translated from the Victorian as "emotional falseness.") The sun does not shine mercilessly, Ruskin insisted, and the skies have never once wept, and, Dickens notwithstanding, fog cannot be found "cruelly pinching the toes and fingers" of a little apprentice boy. "It is one of the signs of the highest power in a writer," Ruskin argued, "to check all such habits of thought, and to keep his eyes fixed firmly on the *pure fact*"—on the "ordinary, proper, and true appearance of things."

Ruskin was reacting in part to sentimental literature and gothic novels, in which every dewdrop and tree limb was apt to quiver with human emotion. But he was also motivated by his own unusual attentiveness to the natural world—and, in particular, to its weather. "Modern Painters" includes scores of chapters on rain, mist, clouds, lightning, sunlight, and storms, and it dwells at length on the fidelity, or lack thereof, with which artists render the sky. Ruskin's own commitment to fidelity was impressive: he once stood outside on a winter morning and counted the cirrus clouds above him—all fifty thousand of them. His first public talk, given when he was eighteen, was on the color and formation of alpine clouds. He delivered another speech two years later, in 1839, on the "Present State of Meteorological Science" to the Meteorological Society of London.

That society, founded sixteen years earlier, was the first of its kind in the world. Ruskin was resisting the personification of weather and insisting on the "pure facts" of it just at the moment in history when those facts were becoming known. In his speech, he called on those who loved meteorology to "zealously come forward to deprecate the apathy with which it has long been regarded." The society of meteorologists, he continued, "wishes its influence and its power to be omnipotent over the globe, so that it may be able to know, at any given instant, the state of the atmosphere at every point on its surface."

It would take the better part of a century, but that vision eventually became a reality. What Ruskin did not predict, however (though it might have pleased him), was that the rise of an empirical model of weather would occasion the decline of the symbolic one—and, with it, the over-all decline of weather in literature.

Ruskin was right to note that meteorology lagged far behind other sciences, though he might have gone on to observe that there were good reasons for the delay. It is harder to study things in the air than things on the ground, harder to study things that change rapidly than things that change slowly, if at all, and nearly impossible to study a global system such as weather in the absence of any kind of real-time global communications. As a result, weather science got almost nowhere in the two thousand years between Aristotle's mostly erroneous Meteorologica, written sometime around 350 B.C., and the development of the telegraph, in the eighteen-forties.

At the dawn of the nineteenth century, then, nearly everything about weather remained a mystery. No one understood the wind. No one knew why temperatures dropped as you climbed closer to the sun. No one could explain how clouds, with their countless tons of rainwater, somehow remained suspended in midair. No one knew what caused lightning, or why it tended to strike the tallest thing around—a problem for Christian meteorology, since it appeared that God had a special propensity for destroying church steeples. No one even knew what the sky was made of. Above

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all, no one knew what it was likely to do next. In 1854, when the Irish barrister John Ball suggested to the House of Commons that one day "we might know in this metropolis the condition of the weather twenty-four hours beforehand," he drew incredulous laughter.

That anecdote appears in Peter Moore's "The Weather Experiment" (Farrar, Straus & Giroux), an account of the rise of modern meteorology. A huge cast of characters brought that field into being, but Moore, while giving them their due, focusses chiefly on Robert FitzRoy, a British naval officer and a towering figure in the history of meteorology. Among other achievements, FitzRoy improved the barometer, pioneered the use of statistics to track the weather, created Britain's storm-warning system, and established the government bureau that would later become the Met Office, the British equivalent of the National Weather Service. He is best known, however, for something he did in his capacity as a ship's captain: in 1831, while casting about for someone to keep him company on an upcoming voyage to South America, he met and invited along a young naturalist named Charles Darwin.

Moore observes a nice parallel: just as Darwin sought to explain the past, FitzRoy sought to explain the future—or, anyway, the portion of it that pertained to the weather. Given the prevailing belief that God reigned over the earth and the sky, both lines of inquiry were unpopular. Even meteorologists struggled to reconcile their profession with their faith. In 1838, William Reid, a British engineer who devoted himself to the study of hurricanes after witnessing the destruction they wrought in the Caribbean, felt compelled to publicly affirm his belief that the laws of nature were "designed by incomprehensible wisdom, arranged by supreme power, and tending to the most benevolent ends." FitzRoy, a devout Christian, ultimately rejected Darwin's work, at the expense of the friendship. Yet his own study contributed as much as anyone's to the forging of a new narrative about the weather—one as different from earlier accounts as Darwinism is from the creation story. Thanks in no small part to FitzRoy's influence, religious explanations of weather gave way to empirical ones, and "the heavens" gradually turned into "the atmosphere": a place that could be subjected, like an island full of finches, to scientific inquiry.

That shift in terminology was telling. Early meteorologists not only developed an entirely new story about the weather; they developed a new language to describe it. Prior to the nineteenth century, Moore writes, those trying to make sense of the weather "had no linguistic framework to scientifically explain what they saw." He quotes a Worcestershire diarist, writing in 1703: "Our Language is exceeding scanty & barren of words to use & express ye various notions I have of Weather &c. I tire myself with Pumping for apt terms & similes to illustrate my Thoughts."

The real problem, though, was not too few words but too many. One could describe the weather in any number of ways (that diarist characterized skies as, among other things, "loaded, "varnished," "bloated," "pendulous," and "like a tall fresco ceiling"), but the terms had no consistent and universal meaning. The problem had been identified as early as 1663, when the British polymath Robert Hooke, who later coined the word "cell" (in its biological sense), proposed a uniform vocabulary for describing clouds. His terms, unsurprisingly, did not stick. "Let Water'd, signify a Sky that has many high thin & small clouds looking almost like waterd tabby, calld in some places a maccarell sky from the Resemblance it has to the spots on the Backs of those fishes," Hooke suggested. He also recommended categorizing certain clouds as "hairy."

It took a hundred and forty years, the influence of Linnaeus, and at least one other rival plan (by the misguided evolutionary theorist Jean-Baptiste Lamarck) for a universal taxonomy of weather to catch on. In 1803, the British pharmacist Luke Howard suggested that clouds be described as *cirrus*, *stratus*, *cumulus*, and *nimbus*—the Latin words for "curl," "layer," "mass," and "rain." Two years later, Francis Beaufort, a British naval officer frustrated by the idiosyncratic weather descriptions recorded at sea, proposed twelve standardized gradations of wind strength, from "calm" to "hurricane": the Beaufort scale. FitzRoy himself contributed perhaps the most significant weather term of all: "forecast."

It is difficult, in our era of tornado watches and storm warnings, to appreciate how catastrophic the weather could be before we had any ability to forecast it. More than eight thousand people died in Britain's Great Storm of 1703, as did fifteen thousand grazing sheep when the storm surge hit the River Severn. (We know as much as we do about the calamity thanks to Daniel Defoe, who chronicled it in scrupulous detail in his 1704 book, "The Storm." Widely credited as the father of the modern novel, Defoe also pioneered the genre of the modern disaster narrative.) Things were no better a century and a half later and across the pond; in 1869, there were 1,914 shipwrecks in the Great Lakes alone. Not coincidentally, the ship-salvage industry was instrumental in lobbying against early weather forecasting. Partly owing to its influence, the British government effectively eliminated FitzRoy's position at the Meteorological Department shortly after his death, and suspended his two major innovations—weather forecasts and storm warnings—until scientific and public outcry sufficed to get them reinstated. Weather still wreaks havoc, but the rise of forecasting has saved untold numbers of lives, to say nothing of ships, crops, money, picnics, horse races, and weddings.

Quite aside from its practical value, the advent of forecasting indicated that meteorology had finally matured. As anyone in a long-term relationship knows, the more thoroughly you understand a system, the better you can predict how it is likely to behave. Mythological and religious explanations of weather not only failed at prediction but excluded it as a possibility; you cannot accurately forecast the caprice of Zeus, or the will of an omnipotent God. By contrast, in the nineteenth and early twentieth centuries, every accurate forecast served as evidence in favor of the new model of weather. (It is easy, these days, to kvetch about the inaccuracy of forecasts, but such complaints are relative. Weather remains imperfectly predictable, and probably always will be—meteorology is the field that gave us chaos theory—but we take for granted just how good prediction has become. It is one thing not to know where Hurricane Joaquin will make landfall, and

something else entirely not to know that it exists until it strikes.) By the beginning of the twentieth century, forecasting was commonplace, meteorologists had cracked most major atmospheric phenomena, and the empirical model of weather had become, as Ruskin had hoped, "omnipotent over the globe."

In the visual arts, the rise of this new model occasioned a revolution in the representation of weather. For centuries, the sky in paintings was heavenly (azure, angel-stuffed) or else was rendered unobtrusively, as a backdrop for the presumptively more important activities on the ground. That changed in the early nineteenth century, thanks largely to the British artist John Constable. Keenly interested in contemporary meteorology, Constable monitored the latest developments in the field, painted outside in all weather, and, on the backs of more than a hundred studies of the sky, recorded the precise climatic conditions under which he painted them. The resulting landscapes featured such realistic weather that one critic, the Swiss painter Henry Fuseli, said that Constable's work "makes me call for my greatcoat and umbrella."

Fuseli did not mean this as a compliment. Initially, Constable's meteorological accuracy met with widespread resistance. The first person to purchase one of his landscapes, outside his own circle of acquaintances, had another artist paint over the sky with a more tepid version. Eventually, though, both the critics and the public came around. Together with his colleague J. M. W. Turner (whose realistic skies Ruskin vigorously defended in "Modern Painters"), Constable paved the way for Delacroix, then Whistler, then Winslow Homer, until, in the visual arts, weather as iconography gave way to weather as weather: a natural phenomenon whose force and majesty were immense and sufficient in their own right.

A commensurate shift notably failed to take place in literature. Meteorology had constructed a new story about weather, down to the vocabulary used to tell it, yet writers seemed unable or unwilling to make use of it, even as their traditional strategies were becoming less viable. With the rise of a scientific understanding of weather, both its mythological and metaphorical clout diminished. Storms seem less like the verdict of God when you can track them by satellite two weeks out, and lightning loses some of its gothic thrill when you know that it is merely electrostatic discharge. A forecast, meanwhile, is a kind of anti-pathetic fallacy: it insists that the weather is the product of natural forces, utterly unrelated to the goings on in our culture, our relationships, and our soul.

While meteorology was advancing, then, the role of weather in literature began to decline. At the same time, the role of weather in real life was declining as well. As Western nations shifted from largely rural to largely urban economies, fewer people worked the kind of jobs that kept them exposed to the elements. As more automobiles hit the road, and more of those roads were paved, it became less of an ordeal to get from A to B in mud and sleet and snow. And, as indoor heating and cooling systems became common, more people were insulated from the vagaries of the weather.

In response to these changes, fiction, too, became climate-controlled: in the modern novel, as in modern housing, outside conditions seldom intruded. It is easy enough to find a rainstorm or a humid afternoon in twentieth-century prose, of course. But, with some notable exceptions (John Steinbeck's "The Grapes of Wrath," Willa Cather's prairie trilogy), weather dwindled as a pervasive and determinative force in fiction. It mattered in the burgeoning field of nature writing, but it lingered elsewhere mainly in poetry (though much less so than in earlier eras) and in children's books, with their tendency toward anachronism and nostalgia. Already robbed of most of its mythological weight, weather gradually lost the rest of its literary status, too. Only in the past few decades, as the facts about weather have become more and more pressing, is the subject beginning to reassert itself in fiction.

A hundred and sixty years after Dickens filled his skies with soot, a hundred and seventy-five years after Ruskin yearned for omnipotence over the globe, four hundred years after Shakespeare made a reckless ruler pull down his kingdom on his head, a hundred and twenty excess parts per million of carbon dioxide in our atmosphere: that is where we stand today. Unlike in Mark Twain's time,

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there is nothing remotely banal about the weather. If anything, we are in mourning for that banality. What used to be idle chitchat about the unusually warm day or last weekend's storm has become both premonitory and polarizing. Nor is there any innate melodrama left in meteorology. Weather is, instead, at the heart of the great drama of our time. Accordingly, the comedy has leached from Twain's line. "No weather will be found in this book" now reads either as denialist—a refusal to face climatic reality—or, very simply, as sad.

But we do not need that line anymore. After a long wait, quite a lot of weather can suddenly be found in our books again. We owe that revival to the same thing that first led to the decline of weather in literature: developments in the field of meteorology. It is not just that the facts about climate change have become clear; it is that, in establishing those facts, the scientific model of weather, which eclipsed the symbolic one in the nineteenth century, is now colliding with it. These days, the atmosphere really does reflect human activity, and, as in our most ancient stories, our own behavior really is bringing disastrous weather down on our heads. Meteorological activity, so long yoked to morality, finally has genuine ethical stakes.

That shift began to be reflected in literature in the later decades of the twentieth century, with the emergence of the genre now known as cli-fi—short for climate fiction, and formed by analogy to "sci-fi." As that suggests, novels about the weather have tended to congregate in genre fiction. The dystopian novelist J. G. Ballard wrote about climate change before the climate was known to be changing; later, Kim Stanley Robinson, Margaret Atwood, and many others used the conventions of science fiction to create worlds in which the climate is in crisis. More recently, though, books about weather are displaying a distinct migratory pattern—farther from genre fiction and closer to realism; backward in time from the future and ever closer to the present. See, among others, Ian McEwan's "Solar," Barbara Kingsolver's "Flight Behavior," Nathaniel Rich's "Odds Against Tomorrow," Karen Walker's "The Age of Miracles," Jesmyn Ward's "Salvage the Bones," and Dave Eggers's "Zeitoun." (Weather is on the rise in nonfiction, too. In addition to "Weatherland" and "The Weather Experiment," recent or forthcoming titles include Tim Flannery's "Atmosphere of Hope," Christine Corton's "London Fog," Lauren Redniss's "Thunder & Lightning," and Cynthia Barnett's "Rain.")

The emergent canon of weather-related fiction got an excellent addition this fall in Claire Vaye Watkins's début novel, "Gold Fame Citrus" (Riverhead). It is set in the future, at a time when extended drought and rapid desertification have turned much of the American West into one "mega-dune," known as the Amargosa, after the first mountain range it consumed. Watkins's title refers to the fantasies that once made people head west; now almost everyone in the region is desperate to move away. Most seek refuge in other states, where they are pejoratively referred to as Mojavs—Okies in reverse, discriminated against and, increasingly, turned away at the borders. Some stay in the desiccated and dangerous remnants of Los Angeles. A few go in search of a community that, rumor has it, has sprung up somewhere in the vast expanse of the Amargosa.

Those include the book's main characters: a soldier turned drug dealer turned surfer and his girlfriend, a third-tier model who was once the literal poster child for water conservation, back when there was still water to conserve. A sweet, damaged, secret-keeping couple, they squat in the remains of a starlet's mansion, until a neglected and developmentally delayed toddler happens into their life. They rescue her, or kidnap her, then head off to the desert—hoping, like so many parents before them, to make a better life for their child. It is there in the Amargosa that the book comes into its own, as a story about the desert, and about deserters—about those who abdicate responsibility and, conversely, those who lay claim to things to which they have no right, from the child of strangers to the resources of a nation.

In the months before "Gold Fame Citrus" was published, reservoirs built to funnel water from the Colorado River to the Southern California desert had sunk to below half their capacity. The snowpack in the Sierra Nevadas dropped to five per cent of the historical average. The air rippled with record-setting heat above the parched ground, an illusion of water where water used to be. And the U.S. Senate, in a move that Robert FitzRoy would have recognized, voted to reject the scientific consensus that humans are changing the climate.

You could describe "Gold Fame Citrus" as science fiction, but only in the sense that it is fiction borne out by contemporary science. You could also describe it as dystopic, but that would miss the point. As Watkins deftly makes clear while almost never panning away from the desert, the plight of the Mojavs is specific to the region, and functionally ignored by the rest of the world. Ask a Syrian, ask a single mother of six in São Paulo's slums, ask those who are bothering to keep track of the effects of climate change: like the future, dystopia is already here. It's just unevenly distributed.

Our earliest stories about the weather concerned beginnings and endings. What emerged from the cold and darkness of the void will return to it; waters that receded at the origin of the world will rise at its end. It is easy, in grim climatological times, to be drawn to the far pole of these visions. Weather has long been a handmaiden of the apocalypse, and the end of the world is so often presaged or effected by extreme climate shifts—floods, fires, freezing cold—that eschatology sometimes seems like a particularly dark branch of meteorology. Today, it is, if anything, even more difficult to imagine an end of the world that is not driven by a change in the weather. We speak of a "nuclear winter," of the firestorms and the radical temperature drop that would follow an asteroid strike, of global climate change nudging planetary temperatures out of the range of the habitable.

But apocalyptic stories are ultimately escapist fantasies, even if no one escapes. End-times narratives offer the terrible resolution of ultimate destruction. Partial destruction, displacement, hunger, want, weakness, loss, need—these are more difficult stories. That is all the more reason we should be glad writers are beginning to tell them: to help us imagine not dying this way but living this way. To weather something is, after all, to survive. ♦

BOOKS

PRINTING MONEY

A radical solution to the current economic malaise.

BY JOHN CASSIDY

The gross domestic product is a measure of all the goods and services that the United States economy produces in a year. It's also a measure of all the income that the economy generates, and how fast it grows helps determine how rapidly over-all prosperity rises. Between 1947 and 1974, G.D.P. rose by about four per cent a year, on average, and many American households enjoyed a surge in living standards. In the nineteen-eighties and nineties, growth dropped a bit, but still averaged more than three per cent. Since 2001, however, the rate of expansion has fallen below two per cent—less than half the postwar rate—and many economists believe that it will stay there, or fall even further. In economic-policy circles, the phrase of the moment is "secular stagnation."

The late Harvard economist Alvin Hansen minted this term during the nineteen-thirties, and Lawrence Summers resurrected it a couple of years ago. Although originally applied to the United States, it is also widely used in reference to the European Union, where G.D.P. growth has been even slower than in the United States, and to Japan, where, for more than two decades, it virtually vanished. Indeed, one of the fears that economic pessimists have raised is that the United States and other Western countries could be heading for Japanese-style stagnation.

What could get us out of the rut? Until recently, the textbook prescription for slow growth involved cutting interest rates and introducing a fiscal stimulus, with the Treasury issuing debt to pay for more government spending or for tax cuts (aimed to spur household spending). That was the recipe that the United States, Britain, and other countries followed after Lehman Brothers collapsed, and it helped prevent a deeper slump. Today, however, neither of the traditional policy responses is readily available. The short-term interest rate that the Federal Reserve controls has been close to zero since December, 2008. Janet Yellen, the Fed chair, and her colleagues can't cut rates any further. And with over-all federal debt standing at more than eighteen trillion dollars Congress would strongly oppose the Treasury's borrowing more money for another stimulus package. In the E.U., the situation is even more fraught. Growth has been negligible for years, interest rates are at very low levels, and a legal commitment to austerity policies rules out a fiscal stimulus.

Adair Turner, an academic, policymaker, and member of the House of Lords, has another idea. In his new book, "Between Debt and the Devil: Money, Credit, and Fixing Global Finance" (Princeton), Lord Turner argues that countries facing the predicament of onerous debts, low interest rates, and slow growth should consider a radical but alluringly simple option: create more money and hand it out to people. "A government could, for instance, pay $1000 to all citizens by electronic transfer to their commercial bank deposit accounts," Turner writes. People could spend the money as they saw fit: on food, clothes, household goods, vacations, drinking binges—anything they liked. Demand across the economy would get a boost, Turner notes, "and the extent of that stimulus would be broadly proportional to the value of new money created."

The figure of a thousand dollars is meant to be strictly illustrative. It could just as easily be five thousand dollars or ten thousand dollars—however much was needed to drag the economy out of the doldrums. These handouts wouldn't represent tax credits or rebates, which are issued by the Treasury Department. The funding would come from the central bank (in this country, the Federal Reserve), which would exploit its legal right to create money. Central banks do this by printing notes and manufacturing coins, but they can also create money by issuing electronic credits to commercial banks, such as JP Morgan and Citibank. Under Turner's

ILLUSTRATION BY DAVID PLUNKERT

BRIEFLY NOTED

THE YEAR OF LEAR, *by James Shapiro (Simon & Schuster)*. In 1606, Shakespeare's theatre company débuted "King Lear," "Macbeth," and "Antony and Cleopatra." The Gunpowder Plot had just been foiled; King James sought to unite England, Ireland, and Scotland; plague had come to London; and Queen Elizabeth's body had recently been moved. Such events, Shapiro writes, were "producing nightmares, tapping deep into Jacobean political and religious anxieties," but they could be critiqued only obliquely. Shakespeare rose to the challenge with his elliptical, nightmarish stories of a king madly dividing his kingdom, the murder of a Scottish monarch, and a domineering queen. Deftly illuminating the plays' more opaque passages, Shapiro captures a Shakespeare moved by—and moving—history.

NEAR AND DISTANT NEIGHBORS, *by Jonathan Haslam (Farrar, Straus & Giroux)*. This history of Soviet intelligence painstakingly chronicles the unglamorous bureaucracy of spying. Drawing on once secret archives, Haslam examines such matters as the deficiencies of Soviet cryptography and recruitment problems after the blow dealt to Communist morale worldwide by Khrushchev's 1956 denunciation of Stalin. The triumphs of the infamous Cambridge Five are dissected, and there is at least one exploding-cake assassination. Haslam's account jangles with the unlovely acronyms of Eastern-bloc espionage—GRU, HVA, SMERSH—and his emphasis rarely strays from the players in "the back rooms where the pencil has proven infinitely mightier than the sword."

THE AUTOMOBILE CLUB OF EGYPT, *by Alaa Al Aswany, translated from the Arabic by Russell Harris (Knopf)*. Set in Cairo in the late nineteen-forties, during the waning years of British colonial rule, this cinematic novel is populated with archetypes: a decadent monarch, a hotheaded revolutionary, a racist Englishman, and his English-rose daughter, who seeks "authentic" experiences in working-class neighborhoods. Political currency comes from the revolutionaries' call for justice set against a widespread reactionary nostalgia for a time when there were rules, "unjust perhaps, but better than this chaos." Conspicuously absent in the evocation of the era are the seductions of political Islam. Aswany dwells instead on pungent details of Cairene street life.

DRYLAND, *by Sara Jaffe (Tin House)*. Its title notwithstanding, this moody coming-of-age novel is soaked in the damp of Oregon winters and poolside locker rooms. Julie, a high-school student, joins the swim team, hoping to orbit a female crush and to understand the disappearance of her brother, a former Olympic hopeful. She is exquisitely attuned to itches and aches—the constriction of a new bathing suit, the throb of a full bladder. Only the pool releases her to a dimension "like sugar, like a dream." Jaffe's meticulous, frank texturing keeps the sex talks and scenes from sinking under tropes of adolescent awakening and presents queer desire as just one of Julie's innumerable, unstoppable sensations.

proposal, that's what the Fed would do—give banks newly created money, which would be passed along to their account holders. Merry Christmas, everyone!

It's a deadly serious proposal, actually, and its author is a sixty-year-old English technocrat renowned for his intellect and his independence. Turner has run the Financial Services Authority (roughly, the British equivalent of the Securities and Exchange Commission), the Confederation of British Industry (akin to the U.S. Chamber of Commerce), and the Pensions Commission (think Social Security). For the past two years, he has been a senior fellow at the Institute for New Economic Thinking, a transatlantic think tank that George Soros set up in 2009. If, despite Turner's impressive credentials, the words "hyperinflation," "Weimar Republic," and "Robert Mugabe's Zimbabwe" are whirling around in your head, he would certainly understand. "My proposals will horrify many economists and policymakers, and in particular central bankers," he writes. " 'Printing money' to finance public deficits is a taboo policy. It has indeed almost the status of a mortal sin."

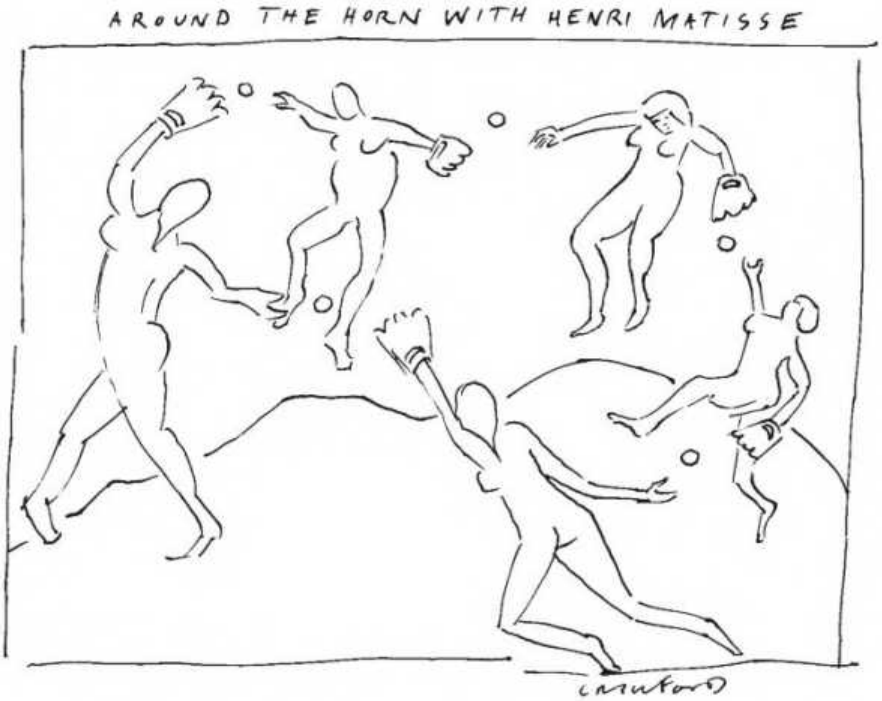
But it's also a proposal that serious economists have broached before. In 1969, Milton Friedman argued that money financing could provide an alternative to Keynesian debt financing. Faced with a chronic shortfall of demand in the economy, Friedman said, the government could print a bunch of money and drop it from helicopters. In 2003, Ben Bernanke, who was then a governor at the Fed, suggested that such "helicopter drops," or their electronic equivalent, could provide the Japanese government with a way to lift its economy out of a decade-long slump. More recently, a number of liberal economists rallying under the banner of "Modern Monetary Theory" have urged the government to reverse budget cuts, financing the spending with money created by the Fed. In Britain, Jeremy Corbyn, the new leader of the Labour Party, has suggested that the Bank of England could pay for some infrastructure spending by printing money.

So far, these ideas have gained little traction. Bernanke, after taking over the Fed, in 2006, seldom mentioned his earlier proposal. Even Paul Krugman, who is usually a big supporter of stimulus programs, has distanced himself from Modern Monetary Theory, pointing to the danger of inflation from excessive monetary growth. Turner, however, insists that creating money may be the only way of generating a decent rate of economic growth and escaping our current predicament.

That predicament, a long time in the making, is closely tied to an enormous expansion of debt—public and private. Back in 1950, Turner reminds us, the total amount of private credit outstanding in the United States (that is, credit extended to households and businesses) was equivalent to fifty-three per cent of G.D.P. By 2007, it had risen to a hundred and seventy per cent. In the United Kingdom, between 1964 and 2007, total private credit went from fifty per cent of G.D.P. to a hundred and eighty per cent. In the decade leading up to the financial crisis, the total amount of private credit grew nine per cent a year in the United States, ten per cent in the United Kingdom, and sixteen per cent in Spain.

Not all debt creation is bad, of course. Firms need credit to pursue business opportunities, such as expanding to a new market or building a factory. People need credit to pay for their education or to buy a home. But if rapid rates of credit creation—particularly, rapid rates of mortgage credit creation—are sustained they tend to generate asset-price bubbles. When these bubbles burst, many businesses and households find themselves unable to service their debts. Loan defaults surge, and the banks that issued the loans get into trouble. Often, the only way to prevent the banks from collapsing is for the government to bail them out, by injecting new capital or guaranteeing bad loans. The standard way to finance these bailouts is to issue more government bonds. But it means that a private-sector debt crisis can morph into a public-sector debt crisis.

After 2008, that's precisely what happened to Ireland and, to a lesser extent, Spain and Portugal. Even in countries where the stricken banks eventually repaid most or all of their bailouts, such as the United States and the United Kingdom, the debt burden rose sharply as governments adopted stimulus programs to ameliorate the broader consequences of lending busts. In the advanced economies as a whole between 2007 and 2014, Turner reports, public debt as a proportion of G.D.P. rose by more than a third. That's a huge increase—so huge it has raised questions about the capacity of many governments to react to the next crisis. Turner refers to this as the problem of "debt overhang."



To break free from this ruinous debt cycle, Turner advocates strict limits on how much credit banks can issue. In addition to forcing banks to hold more capital and thereby crimp their lending, he says, governments should regulate mortgage lending by imposing maximum loan-to-value ratios (e.g., the size of your mortgage and the value of your house) and loan-to-income ratios. He also thinks that rising land values should be taxed more aggressively. "Our explicit objective should be a less credit-intensive economy," he writes. Given what we've been through in the past decade, that sounds like a good idea. But what would provide the fuel for economic expansion? As Turner notes, "We seem to need credit to grow faster than G.D.P. to keep economies growing at a reasonable rate."

One option would be to step up the "quantitative easing" policies that the Fed and the Bank of England have adopted in recent years. Like Turner's proposal, quantitative easing involves the central bank's creating large sums of money, but rather than being handed out to people it is used to purchase large quantities of government bonds and other securities, with the goal of raising asset prices, driving down market interest rates, and stimulating spending. Unfortunately, as Turner points out, quantitative easing has "proved insufficient to deliver robust growth." Moreover, if it were maintained indefinitely, it could have harmful side effects. By keeping the cost of borrowing at ultra-low levels, and boosting the price of houses and other assets, it could end up triggering another credit boom. In parts of Britain, where house prices and mortgage issuances are now rising sharply, a credit boom may already be developing. Turner cites an official forecast that in the United

Kingdom over-all private-sector indebtedness "will by 2020 have risen to its highest ever level." The implication is that another bust won't be far behind.

The best alternative, Turner thinks, is his radical proposal—creating money and handing it out to entities that can spend it. He readily concedes that it wouldn't matter much whether the newly minted money was forwarded to households in the form of bank credits, or used to finance tax cuts, or spent on building new roads and bridges. The key point is that the government would be stimulating the economy without issuing any new debt. It wouldn't be accentuating the problem of debt overhang, or creating the conditions for yet another boom-and-bust cycle.

Of course, creating money does pose other dangers, like an alarming jump in inflation. Turner points to two instances where this didn't happen. During the U.S. Civil War, the Union government printed greenbacks to pay for its military buildup without any disastrous consequences. And in Japan, during the nineteen-thirties, the militarist government used the central bank to finance deficit spending and pull the country out of recession. But Turner acknowledges the counterexamples—like the hyperinflation experienced by the Confederate states, Weimar Germany, and modern Zimbabwe.

To head off this danger, Turner says, money financing should be used sparingly, and for specific reasons: to pull an economy out of a lengthy slump, to pay for the recapitalization of too-big-to-fail banks, or to write off excessive public debts. "If we accept money finance as a normal operation, deployed continuously year after year, the danger that future governments will abuse it is greatly increased," he notes. Later in the book, however, he makes clear that he'll entertain the possibility of creating money to finance ongoing budget deficits, as some adherents of Modern Monetary Theory recommend. Referring to the warnings by Summers and others, he writes, "If the secular stagnation threat is truly as severe as some economists argue, we could counter it by using money finance not as a one-off device but continuously over time."

As a way of preventing elected politicians from overusing the electronic printing presses, Turner proposes putting money finance exclusively in the hands of independent central bankers. Skeptics may wonder if this really solves the problem, though. Even independent central bankers aren't immune to temptation, or to political pressures: many of them are political appointees, after all. If a central bank adopted money finance for one purpose, such as avoiding a recession, and it proved successful, there would be enormous pressure to use it for others, such as debt reduction. And the very hint of such a policy being enacted could sour the markets.

Another weakness in Turner's argument is his assumption that the standard remedy of a fiscal stimulus is no longer available. In the United States and Britain, budget deficits have fallen sharply in recent years, and, despite a rise in debt levels, interest rates are at historic lows, which indicates that the markets aren't worried about those debt levels. These countries should still have the room to adopt debt-financed stimulus packages. Even the Japanese government, which has huge debts, hasn't had any trouble selling bonds to finance a big stimulus program introduced by President Abe. Standard Keynesianism may be an endangered species, but it's far from extinct. And, since we know its pluses and minuses pretty well, it may be wise to stick to it where possible.

Still, there are places—Greece and Ireland are obvious examples—where Turner's arguments carry force. Indeed, a strong argument can be made that the entire eurozone could do with a dose of money finance. Turner mentions a proposal for the European Central Bank to finance three-year tax cuts for all residents of the currency area, before noting that it's probably not politically attainable. Less overt forms of money finance could be more palatable. For example, the E.C.B. could issue money to pay for infrastructure projects, carried out under the auspices of the European Investment Bank, which is owned by all the member states.

Japan, whose public debts are equivalent to about two hundred and forty per cent of G.D.P., is another interesting case. After repeated rounds of quantitative easing, the Bank of Japan, the country's central bank, now owns about a fifth of this debt. Like the Fed, it currently insists that it will eventually sell its bond portfolio back to private investors, and the Japanese Treasury Department says it intends to repay all its debts. But Turner points out another possibility. Since one arm of the Japanese government is effectively lending to another arm, the public debt owned by the central bank could simply be written off. If that happened, Japan would have created a great deal of money and used it to reduce its debt burden—a form of money finance. And it's hard to see how this would generate a spike in inflation.

As this example indicates, some central banks are already exploiting their ability to create money in ways many of their citizens don't fully understand. So far, however, the monetary authorities have avoided explicitly financing spending by the private sector or the government—and as a result, Turner argues, the United States and other countries have incurred heavy costs. He writes, "Our refusal to use that option until now has depressed economic growth; led to unnecessarily severe fiscal austerity; and, by committing us to sustained very low interest rates, increased the risks of future financial instability."

Whether you agree with Turner's proposal or not, it represents an important challenge to economic orthodoxy, which, as he rightly notes, has already failed us once. (Twice, if you include the Great Depression.) And on one point, at least, his argument can't be challenged. Given the problems of debt overhang and slow growth, and the high toll that an extended period of economic stagnation could take on Western democracies, we face a choice of dangers. We could revert to the standard model, hoping that another round of debt issuance in the public and private sectors will juice the economy. Or we could resort to something different and radical: the electronic printing press. To use the phrase Turner picked as his title, it is a choice between debt and the Devil. If economic growth doesn't pick up during the next few years, some countries may well decide to go with Old Nick. ♦

THE THEATRE

LOSING BATTLES

Arthur Miller's morality tales.

BY HILTON ALS

Marilyn Monroe and Arthur Miller, in Reno, Nevada, in 1960.

INGE MORATH/MAGNUM

For some time after I saw the director Ivo van Hove's interpretation of Arthur Miller's 1956 play "A View from the Bridge" (at the Lyceum), I found myself pondering the production's graphic hysteria and homoeroticism. (The show, like the Signature Theatre Company's current revival of the 1964 play "Incident at Vichy," marks the centennial of Miller's birth, to Jewish parents, in Harlem in 1915.) On entering the theatre, one sees, center stage, an enormous phallic object. Blanketed in dark fabric, it brings to mind one of Barnett Newman's totemic sculptures. As the houselights go down, the stage lights come up; the ambience is pearly gray. Offstage, one hears an undulating wave of Fauré's "Requiem"; the music plays softly at first, then louder as the drapery is lifted from the object, which turns out to be a partly glassed-in platform. On it, two shirtless men are washing their arms, necks, and chests, shrouded in chiaroscuro lighting and steam. They are Brooklyn longshoremen: Eddie (Mark Strong), a tall, sinewy, bald man, and Louis (Richard Hansell), who is younger and smaller. As they slough off the sins and the earthly filth they've accumulated in the course of the workday, they resemble models in one of George Platt Lynes's silvery Second World War-era images of men stretching, flexing, and otherwise glorying in the artist's attention—which have become, over the years, emblems of the ways in which queerness was manifested in art long before Stonewall. (Van Hove, who is gay, is the partner of Jan Versweyveld, who designed the show's set and lighting.)

The atmosphere of romanticized masculinity in van Hove's production has little to do with the melodramatic, Clifford Odets-like realism of Miller's script, which describes the opening scene this way:

> The street and housefront of a tenement building. . . . The main acting area is the living room–dining room of Eddie's apartment. It is a worker's flat, clean, sparse, homely. There is a rocker down front, a round dining table at center, with chairs; and a portable phonograph. . . . As the curtain rises, Louis and Mike, longshoremen, are pitching coins against the building at left. A distant foghorn blows.

One of the few things that van Hove's opening shares with Miller's is its narrator, Alfieri (Michael Gould). Dressed in a white shirt and dark trousers—the actors don't wear recognizably period clothes—Alfieri is a lawyer in the Red Hook section of Brooklyn, where Eddie and his family live; it's a rough neighborhood, populated mostly by Italian immigrants. "This is the slum that faces the bay on the seaward side of Brooklyn Bridge," Alfieri says, with a "dis"- and "dem"-laced Brooklyn inflection that does little to lend veracity to the dialogue. "This is the gullet of New York swallowing the tonnage of the world." Alfieri is Miller's Greek chorus; as he looks out at us from the semi-dark stage, he describes aspects of the tragedy we're about to witness. (Miller wrote two versions of "A View from the Bridge." The first, a one-act, premièred on Broadway in 1955; the two-act version, completed the following year, is what van Hove uses. It's not necessarily better—the expansion doesn't improve on any of the characters—but it fills out an evening.)

Eddie shares his flat with his wife, Beatrice (the laser-sharp Nicola Walker), and his beloved orphaned teen-age niece, Catherine (Phoebe Fox). His feelings for Catherine are overwhelming; she makes him shy, lovestruck, in a way that Beatrice does not—or, perhaps, that only Catherine can, largely because she's unattainable. Supported by Eddie, Catherine has been taking stenography lessons and has just got a job working for a plumbing company. When Eddie hears the news, he tells Catherine that it wasn't what he had in mind for her—the guys she'll be working with are too rough, uncouth. He's not interested in Beatrice's two cents—her conviction that Catherine's independence is important to her growth. What he does have in mind is keeping Catherine just the way she is, and the world as it is.

Eddie doesn't know how to handle change. And yet it is change, emotional and otherwise, that he must contend with now that Catherine is growing up. And change that he must answer for: Beatrice wants to know why he no longer touches her or makes her feel like a loved and honored wife. As he turns away from the question, Eddie's neck becomes a taut string; his body is pulled in the direction of something he has no

language for. He can't relate to what is happening around him. And he can't relate to his true self, whoever that is.

Still, there are distractions to be had. Two of Beatrice's cousins, Marco and Rodolpho (Michael Zegen and Russell Tovey, both of whom bring an important erotic energy to their roles), arrive from Italy to stay with the couple. Marco is destitute; he wants to earn some money and then return home to his wife and kids. Rodolpho, who is blond and talented and single, wants to build a life for himself in America. He and Catherine eventually fall in love and plan to marry.

In van Hove's hands, Miller's story of ethical betrayal becomes a story of how bodies look and move in a tragedy. One day, Eddie comes home drunk and finds Rodolpho emerging from Catherine's bedroom. After ordering Rodolpho to pack and leave, Eddie grabs him, roughly, and kisses him. It's meant to be a put-down: earlier, he has made fun of Rodolpho's singing and faggy airs. Perhaps this is the sort of thing Rodolpho likes? But it may also be a scary breakthrough for Eddie. That Judas kiss betrays so much, including himself. Does it reveal what Eddie wants to be—embraced by someone who looks not like Beatrice but like himself? The way Strong plays these moments is interesting: you can't tell whether Eddie desires Rodolpho because he's beautiful and Eddie is repressed, or whether he simply identifies with Catherine and is attracted to what attracts her.

Eddie, as sketched by Miller, is dramaturgically confusing, because he's a textbook Freudian mess: he's twitchy with too many suppressed impulses and unexamined thoughts that don't add up. His neurosis feels less organic than "theatrical"—an accumulation of tics that are meant to give him more presence. But he remains two-dimensional: he's a catalyst for events, not a conduit for change, including his own. Indeed, when I saw Gregory Mosher's traditional 2010 staging of the play, starring Liev Schreiber and Scarlett Johansson, I couldn't quite understand it. Eddie, who was just another mouthpiece for Miller's dry moralism, didn't seem worth the effort around him. But van Hove is a showman. He makes the most of the moments in the play when maleness as *event* happens—when Marco, for instance, who is even stronger than Eddie, picks up a heavy chair by the leg with one hand—in order to show us how the old gladiator Eddie's values are short-circuiting in this inchoate new world. Van Hove stuffs the production with Pina Bausch-like movement, lighting, and sound cues that scintillate whenever Eddie bores. As Eddie's rage grows, the staging becomes almost operatic. Indeed, van Hove treats the text as a kind of libretto, punctuating Miller's flat words with effects, such as the portentous beating of a small drum offstage as Eddie spins more and more out of control, like the frantic characters in Bausch's 1975 rendition of Stravinsky's "The Rite of Spring," another piece about individuality and the community. Eventually, Eddie, in a vengeful move that's more than a little influenced by his own death wish, betrays Rodolpho and Marco to an immigration officer—an act that leads to his death in a rain of blood.

Miller himself felt out of control when he started writing "A View from the Bridge." In his 1987 memoir, "Timebends," he relates, rather touchingly, how the seeds for the play were planted in the forties, when a friend told him a story about a dockworker who had ratted out two brothers. (Miller often based his plays on stories that other people told him or things that he read in the newspaper.) In 1951, he made a trip to Los Angeles to work on "The Hook," a screenplay he was writing, with the director Elia Kazan. Through Kazan, he met Marilyn Monroe. Returning home, he couldn't shake the effect that her emotional honesty and beauty had had not only on his stolid middle-class perspective but on his art and his imagination. (One of Miller's biographers describes him as being emotionally constipated.) The nascent "A View from the Bridge" remained unfinished, as Miller grappled with the change in himself:

> For I knew in my depths that I wanted to disarm myself before the sources of my art, which were not in wife alone nor in family alone but, again, in the sensuousness of a female blessing, something, it seemed, not quite of this world. In some diminished sense it was sexual hunger, but one that had much to do with truthfulness to myself and my nature and even, by extension, to the people who came to my plays. . . . Even after only those few hours with Marilyn, she had taken on an immanence in my imagination, the vitality of a force one does not understand but that seems on the verge of lighting up a vast surrounding plain of darkness.

It was Miller's good fortune and bad luck that he had found someone who acted as a gateway to greater truth-telling for him as an artist, but who also demanded a degree of attention that took him away from his writing and thus away from a deeper self-examination. By the time he completed his one-act version of "A View from the Bridge," Miller and Monroe were romantically involved, but the play still agitated him. "Something in me was disowning the play even as its opening approached," he writes. "I was turning against myself, struggling to put my life behind me, order and disorder at war in me, in a kind of parallel of the stress between the play's formal, cool classicism and the turmoil of incestuous desire and betrayal within it." It's not far-fetched to say that the intimacy Miller struggles with in the play—the intimacy he wants the audience to have with the characters, the intimacy he wants Eddie to have with himself—was due, in part, to the example of Monroe, who drew so much on her own life and feelings in her later roles. Her rawness often led to collapse or hysteria, and it's that hysteria that sometimes emerges in "A View from the Bridge," despite Miller's attempts to suppress it.

Hysterics, of course, supply what theatre demands—words driven by emotions. Bloody with longing and schemes, they hope against hope while never losing their native intelligence; without it, their torrent of language would have no structure. Think about Maggie trying to get her husband, Brick, to sleep with her, in Tennessee Williams's "Cat on a Hot Tin Roof," which débuted the same year as "A View from the Bridge." It's Maggie's blind faith in her marriage, even when faced with all the evidence—Brick's alcoholism and rumored homosexual leanings, for starters—and her talk, talk, talk that make her an indelible character. In Williams's 1961 play, "The Night of the Iguana," T. Lawrence Shannon, a defrocked minister drunk on booze and fever, also can't give up on words, or belief. Part

of what the hysteric is crying out for, in wave after verbal wave, is a transformative experience—something that cannot be explained but which will change one's body and soul and thus experience of the world. "Sometimes—there's God—so quickly!" Blanche says, when she finally hits on a bit of good fortune, in Williams's 1947 play, "A Streetcar Named Desire."

But it's fate, not God, that drives Miller's characters. Miller was averse to a theatrical world in which emotion and mystery were prevalent. From his initial success—his first hit, "All My Sons," premièred on Broadway in 1947—he was a draw for middle-class men who wanted to see their lives represented in theatre. Epic but real, or, more specifically, pointedly "realistic," Miller's male protagonists are, for the most part, good lads who grapple with the value of their goodness in a morally bankrupt world. For Miller, that's God enough.

In "To the Actors Performing This Play: On Style and Power," a 1964 essay addressed to the actors who were staging the first production of "Incident at Vichy," he wrote:

> Acting has come perilously close to being a species of therapy and has moved too far from art. A too great absorption in one's own feelings is ordinarily called self-indulgence. . . . It is to be emphasized again that acting is not a private but a social occupation.

But if the great actors of the day, like Kim Stanley, Marlon Brando, Montgomery Clift, and Monroe—who was unforgettable in her last screen performance, in the 1961 film "The Misfits," written by Miller—had put the social responsibility of art first, would they have made the mistakes and the discoveries that make them transcendent poets?

Miller saw the world in a grid: good was good, bad was bad, and the gray areas of existence were either unexplored in his work or handled clumsily. This weakness is especially clear in "Incident at Vichy" (directed by Michael Wilson, at the Signature). The play opens in Vichy, France, in 1942, in a detention center, where we see a group of men sitting, waiting, but for what? No one says a word until Lebeau, a young painter (well played by Jonny Orsini), engages Bayard, an electrician (realized with passion by Alex Morf), in matter-of-fact conversation:

> LEBEAU: Cup of coffee would be nice. Even a sip. You wouldn't have any idea what's going on, would you?
>
> BAYARD: I was walking down the street.
>
> LEBEAU: Me too. Something told me—Don't go outside today. So I went out. Weeks go by and I don't open my door. Today I go out. And I had no reason, I wasn't even going anywhere.

Lebeau and the rest of the men have no idea why they were picked up by the police: they're ordinary citizens, not especially political, and now they find themselves in a land that Kafka might have invented, were it not so real. The Gestapo, in their efforts to destroy all Jewish vermin and to gain control of the region, are looking for collaborators who are willing to betray Jews, liberals, and other undesirables. One by one, the detainees are led off to a room, where they're either extinguished or given papers that allow them to live "freely" in a world where there is no freedom. As in Miller's 1953 play, "The Crucible," his characters inhabit a community defined by suspicion and compromise: who will sell out his brother in order to survive?

Into this dire situation walks Von Berg (sincerely played by Richard Thomas). An Austrian prince, he is granted immunity by the Nazi officers, but what can his liberty mean when so many others are dying? Touched by the passion of a protesting fellow-detainee, a doctor named Leduc (Darren Pettie), Von Berg gives up his pass and agrees to stay in Leduc's place. Von Berg's ruse is discovered, however, and we hear the guards shooting at Leduc as we see, above the stage, a projected image of the train that will no doubt carry Von Berg to the camps and to his death.

Cause and effect: that was Miller's primary mode as a playwright. By drawing out the illogic and the unpredictability in "A View from the Bridge," van Hove stages a kind of gay man's revenge on that point of view: gay artists, for the most part, live not in a world of clarity and logical outcomes but in one of fracture, in which things don't always follow, in which they have to cope repeatedly with the kind of disparagement Eddie expresses when he kisses Rodolpho. Van Hove shows that kiss for what it is: the brutality inherent in unspoken love, the hysteria at the heart of strangled intimacies. ♦

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ON TELEVISION

SICKNESS AND HEALTH

Stages of life in "Getting On" and "Master of None."

BY EMILY NUSSBAUM

"Getting On" captures the horror of what nurses know: no one dies with dignity.

Even in an age of downer comedies, "Getting On" is a hard sell. It's set in a failing extended-care ward, whose patients are elderly women. The caretakers do a saintly job, but their own lives are stunted: the doctors are solipsists, the nurses are martyrs, and every patient is going to die. Both aesthetically and in its style of humor, the show leans hard into ugliness, with shit jokes, dementia jokes, and enough aging-vagina jokes to make Charlie Sheen blush.

In other words, it's a humiliation comedy, set in one of the more actively humiliating realms of life; a medical show with few of the healing truisms of "Grey's Anatomy" or "Call the Midwife"; and a female-ensemble show stripped of illusions of empowerment. Yet "Getting On," which is based on the acclaimed British original, and which is now in its final season on HBO, lingers in my mind as much as, if not more than, almost any other dark comedy, even in this era of exceptionally good options. ("Review," "Bojack Horseman," "Girls," "Veep," "Louie," "Doll & Em," "You're the Worst," "Rick and Morty"—I could go on. Why do people even talk about the drama on cable when the comedy field is so much stronger?) "Getting On"'s signature is a pungent blend of compassion and nihilism, a sensibility that may be recognizable to anyone who has floated in the miasmic half-life of a hospital—the definition of "You had to be there." Its best jokes work as a magnifying lens for people the world usually prefers to keep invisible.

Only you know if this is your kind of thing. If it is, please go back and watch the excellent first two seasons, which, with only six episodes each, are easy to catch up on. Many of the show's strongest bits are moments of slapstick that are hard to imagine on any other show; they mine the foulest aspects of aging and medical distress for "Jackass"-level hilarity. In one of the standout episodes in Season 2, Varla—a bigoted, manic old crone, played by the great June Squibb—is scheduled to check out of the ward, only to have the process degenerate into racial slurs and ball-grabbing. Eventually, Varla strips down and gets caught in an automatic door, her squat naked body squashed and flapping, while she howls as if she were Queen Lear. In the new season, an addled elderly woman gets stapled repeatedly in the head as part of a medical procedure, and smiles blankly as her family looks on in horror. The scene goes on for so long that it begins to feel like too long—and then it goes on for one beat more, rounding the corner from punishing to hilarious.

Laurie Metcalf plays the head doctor, Jenna James, a wannabe fecal-research luminary who helplessly patronizes her nurses, DiDi (Niecy Nash, the world's most skillful underplayer) and the needy, bossy Dawn (Alex Borstein). None of them are happy, exactly, but Dawn is an indelible weirdo: with her lacquered black hair and her childlike pop-eyes, she's a vortex for drama, so desperate to be loved that she'll take vomit-soaked kisses from a dog just to feel intimacy. "I just feel so sorry for anyone who's not married," Dawn crows, bragging about her quickie marriage. But when she learns that she's seriously ill the show captures the cosmic horror of what nurses know: that, to quote the songwriter Jason Isbell, no one dies with dignity. "Do you want us to turn you off now?" an E.M.T. asks, as Dawn stares through a long-distance telepresence robot at a patient they've lost. "No, I can do it from my end," she replies. "I want to stay on a little while longer." The shot lingers, capturing Dawn's face filling the distant screen, as she gazes into the room of a dead woman.

ILLUSTRATION BY STEVE WACKSMAN

The first four episodes of this season, though skillfully directed by Miguel Arteta, vary in effectiveness, but the third is pretty perfect, particularly Rhea Perlman's performance as a double-amputee convict determined to escape from her hospital bed. "Getting On" provides an ideal stage for such cameos: last season featured brilliant performances from Betty Buckley, Jean Smart, and Carrie Preston. But a special prize should go to Birdy, played by the eighty-seven-year-old Ann Guilbert, whose TV roots go back to "The Dick Van Dyke Show," where she played the nosy neighbor, Millie. Birdy's been in the ward since the first episode, manhandled and soothed by the ensemble. In a scene that suggests the intent of the whole show, she simply looks up at DiDi and asks, "Do you think about me?" DiDi pauses and replies, quietly, "More than you can imagine."

On a trip to Los Angeles a few years ago, I caught Aziz Ansari's standup act at the club Largo. He was pretty funny, but there was a sardonic narrowness to his performance, which was devoted to single-guy dating issues—hookup etiquette, sexting, and so on. At the time, Ansari was best known for playing Tom Haverford, on "Parks and Recreation," an extreme variation on that same hipster-bro persona: a wannabe mogul, drenched in his signature "cologne cloud," who skirted active douchiness only because of a strain of enthusiastic innocence.

So I wasn't prepared for how strong and wide-ranging and genuinely funny "Master of None," Ansari's new Netflix comedy, turned out to be. If "Getting On" is a downer comedy, "Master of None," which Ansari created with Alan Yang, is a fizzy upper, puppyish yet stealthily confident in its comedic goals. Its main character is Dev—an Ansari-like actor, a young single guy in New York who watches Netflix, banters with his buddies, goes to clubs, auditions for TV shows, and hooks up. He lives life as a choose-your-own-adventure, continually worried about which page to turn to. "Part of me is, like, Yeah, it could be an amazing human experience," Dev muses in the pilot, about having kids. "But then part of me is, like, All right, later tonight, I want to get some pasta. . . . What if I don't find a sitter, huh? Then what? What, I'm not eating the pasta? That sounds *horrible*."

That opening installment has shaggy charm, but it suggests a more familiar show: an urbane indie-film spin on "Friends" or "New Girl," all sexual mishaps and marrieds versus singles. Then the series cracks open, starting with the second episode, an instant classic about second-generation immigrants and their parents (Ansari's mother and father play Dev's parents), a plot so affecting that it likely caused a wave of phone calls to elderly relatives. "What an insane journey!" Dev's Taiwanese-American friend marvels. "My dad used to bathe in a river. And now he has a car that talks to him."

An equally strong episode, "Indians on TV," is a cunningly plotted screwball meditation on ethnic-casting politics, with a running joke about Indian actors having their hearts broken by the revelation that the eighties movie "Short Circuit 2" starred Fisher Stevens in brownface. When Dev considers exposing a racist remark by a TV executive, he gets strategic advice from Busta Rhymes: "I don't think you should play the race card. *Charge* it to the race card—feel me?" These scenes add up to a satisfying meta-statement: letting four varied Indian actors debate their own representation opens fresh comic areas, but it also lets us know who is in charge.

The show continues to deepen, building on themes about empathy and risk. Dev falls for a P.R. rep named Rachel. He is cast as a scientist in a "black-virus movie" called "The Sickening." In certain ways, Dev is a callow guy, but he's also helplessly insatiably curious, an identity-politics empath. When female friends tell him stories about stalkers, he becomes a mouthy insta-feminist. Even a public masturbator brings out his tendency to overidentify: "All right, stop making me weirdly kind of sympathize with you," Dev complains. Once in a while—as in an episode about listening to old people—this approach verges on corny. Not every joke lands. But it doesn't matter. The show, with its funky score, "Louie"-ish look, and game ensemble, has an infectious air of optimism, a romantic streak much like that of "Parks and Recreation," from which "Master of None" got several of its writers. Ansari's breakthrough looks like another small cable comedy, but it feels like the future. ♦

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THE CURRENT CINEMA

SECRET LIVES

"Carol" and "Legend."

BY ANTHONY LANE

Rooney Mara and Cate Blanchett in an adaptation of a Patricia Highsmith novel.

Who is the heroine of Todd Haynes's "Carol"? There are two candidates. One is Carol Aird (Cate Blanchett), a wife and mother whom we first espy in a mink coat, and who never really sheds that touch of caressable luxury. The second is Therese Belivet (Rooney Mara), who is only just a woman; in the 1952 novel from which the film derives, Patricia Highsmith's "The Price of Salt," Therese—pronounced the French way, *bien sûr*—is nineteen. Mara's poise may add a few years, but, nevertheless, a précis might suggest a disturbing tale of maturity preying on youth. Yet that is not what emanates from "Carol." It feels more like a meeting, or a conflagration, of equals. "Take me to bed," one says to the other, and the line is both a yielding and a command.

The time is the nineteen-fifties, perhaps the last epoch when, as a moviegoer, you could still believe that some enchanted evening you would see a stranger across a crowded room, and somehow know. The sighting takes place some disenchanted winter day, in Frankenberg's, a department store in Manhattan, when Therese, a temporary salesgirl in a Santa hat, serves Carol at the peak of the Christmas rush. Carol leaves her gloves on the counter—a detail not found in Highsmith but cleverly stitched on by Haynes and his excellent screenwriter, Phyllis Nagy, who make us wonder, at once, whether Carol is being cunning or forgetful. Either way, she gets results. Therese makes contact; Carol invites her out to lunch, and then to the Aird family home, in New Jersey. Before we know it—almost before *they* know it—the two women embark on a road trip. Carol's smooth gray Packard glides along like a boat, as if roads were rivers, and the open country offers space, as New York could not, for the free play of forbidden love. It's possible that Carol and Therese might pause at an intersection to let another car, bearing Humbert and Lolita, sweep past.

The marriage of true minds, of course, demands impediment. Why should Haynes return to the patch of history that he visited in "Far from Heaven" (2002)? Because the period guarantees not only high-grade romantic trappings but also the basic thwarting without which romance cannot flower into drama. If Haynes had updated "The Price of Salt" to the present, our response would have been: big deal. Trade your straight marriage for a same-sex relationship, these days, and you will be hailed for your emotional honesty, whereas Highsmith, steeped in crime fiction, needed the creak of danger and the hiss of social disdain. The film is at its best when it honors that craving for trouble—when Therese, idly picking through Carol's suitcase and fingering the fabric of the clothes inside, discovers a gun. (Carol fears being trailed.) For an instant, the lovers might be thieves, fleeing a heist or a suspicious death.

But what, in fact, have they left behind? Well, Therese is abandoning Richard (Jake Lacy), her tepid boyfriend, while Carol is faced with a graver loss. She and her husband, Harge (Kyle Chandler)—somehow, a whole bad marriage is contained in the monosyllabic thud of his name—are already getting divorced as the movie begins, and, once he gathers evidence of what is regarded as his wife's immoral conduct, he gets custody of their daughter, Rindy (played by Kennedy and Sadie Heim). Here the film stumbles, since we had little sense of Rindy in the first place, and Carol's maternal agony, such as it is, does not endure. Her coolness, measured out in Blanchett's every gesture, frosts over with a hint of cruelty. That, I guess, is true to Highsmith, who has scant interest in children or in the panoply of domestic joys, which to her are barely joys at all.

Where "Carol" does part company with the novel is in the testimony of the senses. Highsmith soaks her prose in a disgust worthy of Graham Greene, starting with an account of lunch at the Frankenberg's cafeteria ("a grayish slice of roast beef with a ball of mashed potatoes covered with brown gravy") and scarcely letting up. Haynes, it is fair to say, does not do gravy. He does beauty, and a dread of the unbeautiful sustains his film. Carol tells Harge that, if they go to court, "it gets ugly. We're not ugly people." When she first appears in the store, you see at a glance that her hat,

ILLUSTRATION BY MATT TAYLOR

her soft scarf, and her nail polish form a chord of coral red, and you realize that a symphonic surge of loveliness is heading your way. So why fight it? Blanchett cocks her cigarette at the perfect angle, pearling our view of her in a faint mist, and the mink coat alone is enough to make animal-rights activists purchase a nice set of steel traps and head for the woods. Highsmith describes a "mob" at the mouth of a subway, "sucked gradually and inevitably down the stairs, like bits of floating waste down a drain," but the only drain we see onscreen is an iron sewer grate, as delicate as the rood screen of a church, that serves as a backdrop to the opening credits. Even the habitations of trash can be adorned.

There can be something ruthless in this hunt for style. In order for "Carol" to stay easy on the eye, the director must banish anything that feels maladroit or tough. The sex could have been feral, a chance to snap the decorum that rules elsewhere, instead of which the bedroom looks as well behaved as a cocktail lounge. And where, pray, is the social mismatch? If Therese were some thrifty guy, toiling in a garage, you could bet that his fling with a rich and jobless dame would be taut with unease; think of Montgomery Clift, in "A Place in the Sun" (1951), shifting from the wrong to the right side of the tracks and finding Elizabeth Taylor. As two gorgeous people, they felt both fused and doomed, while Carol and Therese simply click, and to hell with class. That said, the film is a casting coup, with Blanchett's inherent languor—plus that low drawl of hers, a breath away from boredom—played off against the perter intelligence of Mara, whose manner, as always, is caught between the alien and the avian. ("What a strange girl you are. Flung out of space," Carol says to Therese.) Mara pecks at the world, testing it out before taking it on, and, if Haynes can't resist adding winged liner to the corners of her eyes, thus recreating the young Audrey Hepburn, I don't blame him.

Like Thelma and Louise, our heroines are the story of the film. Aside from Chandler's baffled Harge, and a typically strong and witty performance from Sarah Paulson, as Carol's gay best friend, almost everything else fades from memory, including sequences with lawyers and a meagre subplot about Therese's ambitions as a photographer. Yet Carol and Therese are enough. The final scene between them—the final gaze—carries extraordinary weight and wields a delicious shock. We have spent the past two hours gasping on cue at the outfits and the jewelry, and asking why the distributors couldn't go the extra mile, show the film in AromaRama (first used in 1959), and pump the theatre full of Arpège and Femme de Rochas. In short, we suspected that "Carol," like "Far from Heaven," was holding its vision of the past in quotation marks, too chilled by cleverness to bother with our hearts. And guess what? It turns out that, all along, Todd Haynes was in the mood for love.

The league of Tom Hardy fans, whose optic nerves have yet to recover from "Mad Max: Fury Road," are in luck. "Legend" gives them a double helping of their man. Hardy plays two parts: Reggie and Ronald Kray, the criminal twins who swaggered through London in the nineteen-sixties. They were East End bullies who expanded their parish of intimidation to include night clubs in the West End, where lowlifes consorted with the well bred. Reggie was more of a businessman, though a brute when occasion demanded; Ronnie was a flat-out psychopath, glaring through spectacles with thick black rims along the top, like the bars of a cage.

The movie was written and directed by Brian Helgeland, whose screenplay for "L.A. Confidential" (1997) won an Oscar—deservedly so, for the skein of plot required a steady hand. "Legend," by contrast, pummels us into believing that it has a plot, where none exists. The Krays rise and fall, lash out, and rise again, and Helgeland strives to lend shape and purpose to that bestial rote by summoning witnesses. We get the Scotland Yard copper (Christopher Eccleston), who spends obsessive years attempting to nail the brothers, and Frances (Emily Browning), who is dazzled into marrying Reggie, and whose voice-over supplies frequent—and superfluous—reflections on the life of crime. There is something unpleasantly hectoring in the title, which assumes that the Krays were stars of their age. Is that really tenable, fifty years on? Were they genuine overlords or vainglorious goons? As you would expect, Tom Hardy is fearsome to behold, twice over, but the legend doesn't need his assistance. It needs taking apart. ♦

NEWYORKER.COM
Richard Brody blogs about movies.

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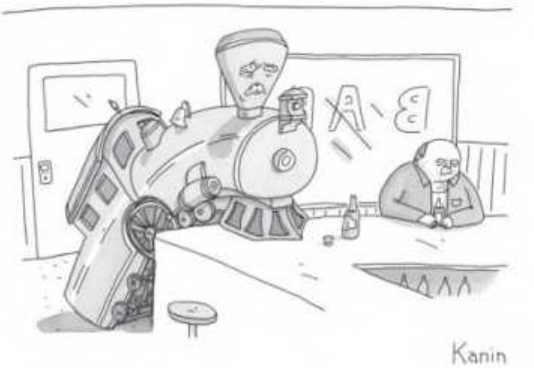
CARTOON CAPTION CONTEST

Each week, we provide a cartoon in need of a caption. You, the reader, submit a caption, we choose three finalists, and you vote for your favorite. Caption submissions for this week's cartoon, by Michael Maslin, must be received by Sunday, November 22nd. The finalists in the November 9th contest appear below. We will announce the winner, and the finalists in this week's contest, in the December 7th issue. The winner receives a signed print of the cartoon. Any resident of the United States, Canada (except Quebec), Australia, the United Kingdom, or the Republic of Ireland age eighteen or over can enter or vote. To do so, and to read the complete rules, visit contest.newyorker.com.

THE WINNING CAPTION

"I move for less transparency."
Zachary Phelps, Oak Harbor, Wash.



THE FINALISTS

"We uncoupled."
Erik Mintz, Bronx, N.Y.

"I just feel there's no light at the end of the tunnel."
Joe Coomes, Atlanta, Ga.

"She left me for an engine that could."
Alexander Toth, Boston, Mass.

THIS WEEK'S CONTEST

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