

CLIPS NICHOLAS DUCASSI

ARTS & CULTURE ENTERTAINMENT INNOVATION BUSINESS TECHNOLOGY

I've interviewed and written feature profiles of artists, entertainers, and entrepreneurs, from Academy Award winners and c-suite executives to television actors, film producers, professors, and more, including:

Sian Heder, Writer/Director, *CODA*

Judith Light, Actress, *Transparent*

Billy Porter, Actor, *POSE*

Geo Bivins, EVP Promotions, *RCA Music*

Victor Ng, Designer, *The New York Times*

Victor Quinaz, Writer, *Big Mouth*

Ian Harding, Actor, *Pretty Little Liars*

Larry Powell, Actor/Writer

Cory Cott, Actor, *Newsies*

Kourtney Kang, Writer, *Fresh Off the Boat*

Rachel Song, Film Producer, *A Kid Like Jake*

France-Luce Benson, Playwright, *Detained*

Josh Gad, Actor, *Beauty and the Beast*

Rory O'Malley, Actor, *Dreamgirls*

Chante Adams, Actor, *A League of Their Own*

Carter Redwood, Actor, *FBI: International*

Teresita Fernandez, Artist

Desmond Meade, Activist, FL Rights Restoration

Dr. Bennet Omalu, Neuropathologist (CTE)

Darryl Britt, CEO, *Apprio*

Amit Sachdev, EVP, Vertex Pharmaceuticals

Neal Rajdev, SVP, *Indigo Agriculture*

Alfred Kuehn, Founder, *MSA*

George Bennett, CEO, *Good Measures*

Justin Edmund, Designer, *Pinterest*

Gary Gates, Professor, *Carnegie Mellon U.*

Michael Smith, Professor, *MEIM*

Jessica Fang, SVP, *FOX Corp.*

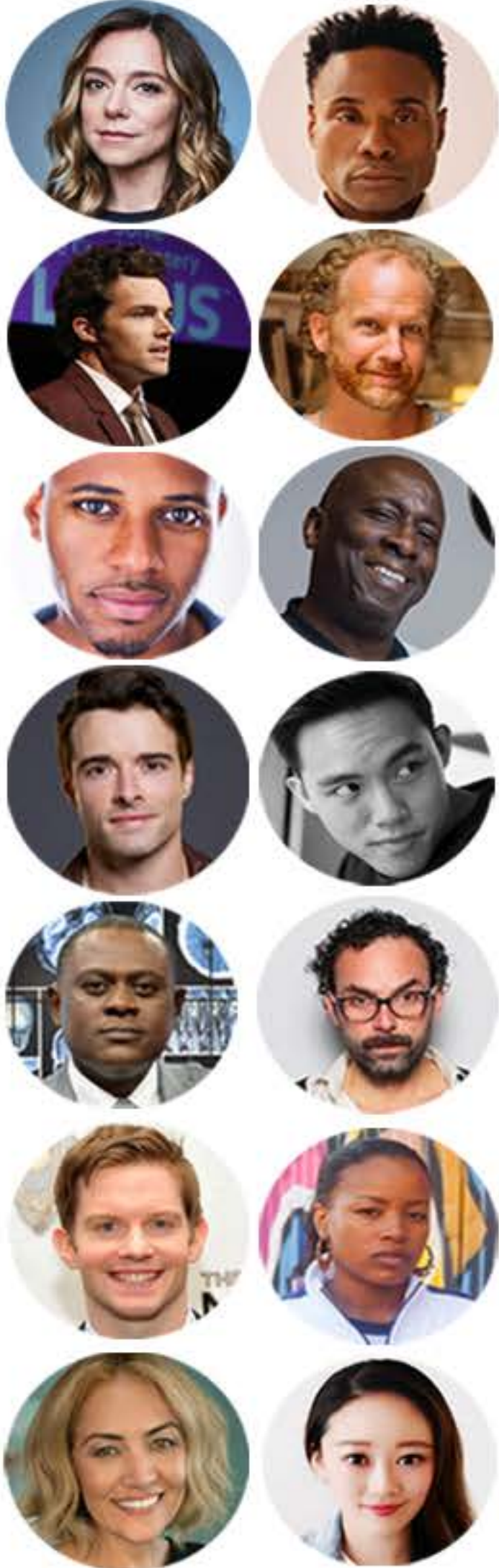
Brenda Harger, Professor, *CMU E.T.C.*

Clara Pratte, Founder, *Navajo Power*

Stephen Antonson, Sculptor

Kenya C. Dworkin y Mendez, Professor

Jamie Burrows, Musician



A SHINING LIGHT

By Nicholas Ducassi

Judith Light's distinguished acting career and her active support for the LGBTQ community will take center stage at Carnegie Mellon University this May, when she will be presented with the Alumni Association's most illustrious honor, the Lifetime Achievement Award.

Light's career has spanned five decades and garnered multiple awards, including Tonys and Daytime Emmys. A 1970 graduate of the School of Drama in CMU's College of Fine Arts, she stars in Amazon's groundbreaking and Emmy-award winning television comedy "Transparent," a role for which she has been nominated for a Primetime Emmy and a Golden Globe Award for Best Supporting Actress.

"I've been doing this a long time, and I owe a lot of that to my training at Carnegie Mellon – to be flexible, powerful and resilient – and to use our instrument in all different ways for all different avenues of the business," Light said.

Her stage career includes six Broadway productions, including back-to-back Tony award winning turns in "Other Desert Cities" in 2012 and "The Assembled Parties" in 2013. She also has been a prominent face on television since the 1970s, with starring roles in ABC's soap opera "One Life to Live," the long-running ABC sitcom "Who's the Boss," the ABC comedy "Ugly Betty" and as Shelly Pfefferman on "Transparent."

In addition to her acting career, Light has been a prominent advocate of the LGBTQ community, supporting organizations, including Point Foundation and Broadway Cares/Equity Fights Aids.

"Judith stands out as an exceptional artist, an actress who is not only well respected in the industry, but also has shown a great commitment to social justice issues," said CMU's Director of Alumni Relations for Campus & Volunteer Engagement Lynn DeFabio. "She is making an impact in the world through her passionate involvement in many organizations and charities representing the LGBTQ community and the fight to end AIDS."

"WHAT I HAD HOPED AND LONGED FOR CAME TO FRUITION FROM MY CARNEGIE MELLON TRAINING – FOR THE SCHOOL TO HONOR ME WITH THIS KIND OF RECOGNITION IS TRULY BEYOND MY WILDEST DREAMS."

-Judith Light

Light said the roots of her advocacy began in drama school. "I had a professor early on who talked about the privilege of what it meant to be in this business. ... "He said 'we are in the service business. You are being of service to people. You are allowing them to come into a theater or to watch a film or a television show, and you are giving them another perspective of who a person might be, and what their life might be like.' Your work is not about your ego – it's about who you're serving, and what's the best way you can serve."

This past December, Light was honored with the Elizabeth Taylor Award for her activism from the nonprofit organization ACRIA, which supports HIV research. She received the award from 1999 School of Drama alumnus Zachary Quinto, who said, "I honestly don't know how one person could say or do more."

Peter Cooke, head of CMU's School of Drama, said Light embodies what every drama alumnus should have. "I want empathy, passion and technique to be the triple threat of the CMU dramat," he said.

[View in Carnegie Mellon Today digital archives](#)

GLOW

CMU Alumni Tag Team Their Way Through Hollywood

By Nicholas Ducassi

Early in the second season of Netflix's hit comedy series "GLOW," a small army of female amateur wrestlers rampage through a mall as a young man wielding a camera and a furry mustache chases them. They challenge old ladies to races, stage fights on escalators and generally terrorize unsuspecting shoppers. Carnegie Mellon University's Victor Quinaz stars as cameraman Russell Barroso who chronicles the wrestlers' journey in nine episodes of "GLOW"'s second season. Fellow CMU School of Drama alumnus Sian Heder directed one of the 10 second-season episodes.

Variety Magazine calls season two "spunky, tenacious and determined" – adjectives that also describe how best friends Quinaz and Heder arrived on the set of one of television's hottest shows.

"Sian and I had one of the best journeys of that school," said Quinaz, one year her junior in CMU's School of Drama. "We were both scholarship kids, and we needed money so badly that she and I would have to miss parties to go do odd jobs."

Quinaz said they grappled about dramatic theory while working side by side in the box office but they don't quibble anymore. "I've learned not to fight with Sian."

When Quinaz moved to New York after graduation, Heder helped him get a job at the bar where she worked. When both actors found more success behind the camera than in front of it, they leaned on each other for support. "Sian's always had my back. We're family," Quinaz said.

Today, they're both highly sought-after writers and directors. Heder wrote for several seasons on Netflix's other female-centric hit comedy "Orange is the New Black." She also wrote and directed Sundance darling "Talullah," starring Ellen Page and Allison Janney (Netflix).

In addition to Quinaz's starring role in "Glow," he is a writer on the animated Netflix comedy "Big Mouth" and a producer on Netflix's hard-hitting docu-series "Last Chance U." He's also the writer and director behind films including "Periods," "Breakup at a Wedding," which stars Heder, and "Hollidaysburg," the latter two produced by Before the Door, the production company created by his drama school pals Zachary Quinto and Neal Dodson.

While Netflix and Before the Door productions are bigger budget affairs, Quinaz knows Russell Barroso's quick and cheap, filmmaking-at-any-cost ethos well.

In his senior year, Quinaz's professors tried to halt the young actor from writing and directing his first feature film starring all of his classmates, among them Cote de Pablo, Matt Bomer, Pablo Schreiber, Katy Mixon and Joe Manganiello. The professors would've preferred their seniors focus on Broadway preparations.

Quinaz responded like any good Hollywood producer would: he put in a call to the most powerful person he could, then-CMU President Jared Cohon, who helped Quinaz secure equipment, space and the approval of the School of Drama.

"For most of us, it was our first experience in front or behind the camera," Quinaz said. He shot it in the nooks and crannies of his senior year schedule, skipping parties to edit the film on an early model iMac purchased with Cohon's help.

"Far and away the most valuable thing I took from my years at CMU were my friendships," Quinaz said.

These days, he sees his friends in writers rooms, directors chairs or sitting across the table from him in pitch meetings. The best part? Not only do his closest friends share his dreams – they get to help each other reach them.

[View in Carnegie Mellon Today digital archives](#)

The Rise to Stardom of Carnegie Mellon Roommates

Josh Gad & Rory O'Malley



By Nicholas Ducassi

Room keys dangle from their newly minted Carnegie Mellon lanyards as the two wide-eyed freshmen, separated by a hallway, size each other up. It's move-in day at Hamerschlag dorm, and the strangers are a mixture of excited, nervous, and oh-my-God-I'm-actually-in-college-now terrified. When they discover they're both acting majors, there's a connection. They're not roommates, but their shared home guarantees they'll see at least one friendly face in the coming days. Phew! They chat as their mothers help them cart boxes of their belongings up the Hamerschlag stairs.

Although they have the same major, they're as different as their silhouettes. Josh Gad (left) is jovial, big-boned, and big-hearted—a class clown with a quick wit and a Zero Mostel zest for practical jokes. “An agent of anarchy within any class,” says acting professor Ingrid Sonnichsen. “He was dear, absolutely dear—but you wanted to housebreak him.” Rory O'Malley (below) is quieter, taller, and more muscular, with ruddy cheeks and a boyish smile. Acting professor Tony McKay describes him as “thoughtful, even-tempered, reserved” but no less passionate, a “reticent man who onstage brings it to a boil.” Or as acting professor Don Wadsworth puts it: “Rory is an ‘aw shucks,’ 1950s, ‘let me carry your groceries for you’ kinda guy.” And Josh Gad? “Josh would play the old lady who was carrying the groceries.”

Their fall semester brings them closer together, a result of their groggy walks to mandatory 8am yoga classes and late-night post-rehearsal treks home. After an autumn of self-discovery and new routines, winter ushers in a geographical change in their friendship. Gad's roommate drops out, which hardly leaves him disappointed—he'll be perhaps the only freshman on campus with his own room. O'Malley, though, has other plans for the vacant top bunk. Despite Gad's best buttalls, O'Malley carts his boxes down the hall and tacks up posters on the walls of his new digs.

Not long after moving in, O'Malley comes to the rescue of his new

roommate. Gad is having trouble memorizing the weekly speech assignment. Every freshman acting student has to recite a memorized poem with perfect diction, followed by an immediate critique from the professor—in front of the entire class. “I knew I was going to get lambasted,” says Gad. Not if O'Malley can help it. He listens to Gad's recital over and over, helping him whenever he loses his place. Gad passes the exam, avoiding the professor's wrath.

The roommates know they've got a good thing going, so they decide to move into an off-campus apartment together for sophomore year. Just seven days into their new living arrangement, O'Malley tells Gad there is something he must tell him. It sounds serious: “I'm gay.”

Gad is speechless. It seems to him that O'Malley has charmed every female on campus with his boyish smile—he's gay? Gad's loss for words doesn't last long. He tells his best friend that being honest with himself and his friends is both courageous and the right thing to do. O'Malley, who had a “very Catholic upbringing,” is relieved that he can count on Gad's friendship. Campus support follows. “CMU was a great place for me—to have great role models, other faculty members, students who were proud of themselves. ... I made a decision to be one of them, to be proud of who I was.” Gad says he should have realized O'Malley was gay the moment he decorated their Hamerschlag room freshman year. “He had a poster of Sarah McLachlan and Bono on his wall. Those two don't mix in any straight community, ever!”

After four years of training, the roommates—who have portrayed clowns, animals, even inanimate objects—are ready to get paid. During their final semester, they head to New York City with their classmates for the drama school's annual Senior Showcase. For three days, they each perform a few minutes of material for hundreds of agents, managers, casting directors, and producers. Like a scouting event for athletes, or a job fair for business majors, it's a big deal.

More than a dozen industry folk request to meet with Gad. No one calls

O'Malley. No one. While Gad marches around Manhattan for meetings, O'Malley wanders the theater district, staring at Broadway marquee that his name may never grace. They'll get another shot at the Los Angeles Showcase just two months later, but it's little consolation for O'Malley—he planned to move to New York after graduation. At the L.A. showcase, Gad again gets a big response. This time, O'Malley gets a few bites. With no choice but to head west, he settles in L.A. after he and Gad earn their degrees from the School of Drama in 2003.

Gad, on the other hand, can't seem to settle down. He has prospects on both coasts and keeps chasing auditions. “It's really hard” he says. “You're in this little bubble [CMU], and suddenly it explodes, and you're thrown out into this enormous sea, and you don't know how to swim, and you have to figure out how to swim immediately, and that's really unsettling.”

Drowning in frequent-flier miles, Gad calls O'Malley. O'Malley's advice is clear: “You have to just choose a place and make that your home for a little bit, because it'll ground you, and it'll give you the opportunity to figure things out.” Gad listens. He leases an apartment near O'Malley's; soon enough, Gad is cast in a small play. Besides the paycheck, there's more good news in the role: he meets his future wife, who performs opposite Gad as the lead actress.

During the next two years, the former roommates' careers inch forward, barely. Ironically, Gad's struggles reassure O'Malley, who sees Gad's career as a benchmark for his own. “In those first few years when Josh wasn't really working a lot, I thought ‘OK, good, I have some time. I'm still on my way.’”

In early 2005, while in New York City to help develop a small musical, O'Malley sees a preview performance of a new Broadway musical: The 25th Annual Putnam County Spelling Bee. He falls in love with the show and one role in particular, William Barfee. It reminds him of his best friend. He calls Gad and says, “There's a guy in this show who's going to win a Tony,” and adds that if he ever leaves, “you're the only person who can replace him.”

His words don't resonate with Gad. For the third year in a row, Saturday Night Live has refused to audition him. He's been out of work for months, and he's had enough. He calls his mother to deliver what he thinks will be welcome news: he's quitting acting and heading to law school. Surprisingly to him, she starts crying, heartbroken her son is giving up his dream.

A few days later, before he even has a chance to pick up an LSAT study guide, Gad's agent calls him. Spelling Bee needs a replacement for the role of William Barfee. They want to see him. He auditions, and O'Malley's prediction comes true. Instead of completing law-school applications, Gad starts memorizing lines for his Broadway role.

As goes Gad, so goes O'Malley, who soon starts to squeeze his way into bigger roles. He lands a small part in the movie-musical Dream-girls, and once shooting ends, he decides to focus solely on musicals. He packs his car and heads to New York. His gutsy decision soon pays off when he's cast as an understudy in a musical. As an understudy, he waits in the wings, ready to perform one of several different roles in case an actor has to miss the show. It just so happens he is an understudy for, get this, Spelling Bee.

Sure enough, bigger auditions start coming Gad's way. He's soon asked to fly to L.A. to meet the producers of 21, a film starring Kevin Spacey. He'll have to miss a couple of Spelling Bee performances. With that,

O'Malley is no longer waiting in the wings. You just can't make this stuff up: both Tartans make their Broadway debut—in the same show—less than three years removed from their off-campus apartment and walks across the Cut.

Work begets work; after 21, Gad lands a lead in the TV sitcom Back to You, while O'Malley enjoys consistent work in Off-Broadway and regional musicals. In early 2008, their agents ask whether they'd be interested in helping develop an irreverent new musical comedy written by Trey Parker and Matt Stone, creators of the wildly successful television cartoon South Park, with music by Robert Lopez, co-creator of the smash hit Broadway musical Avenue Q. For Gad and O'Malley—huge fans of South Park—the decision is a no-brainer. Giddy for the workshop to start, O'Malley even brings a DVD of Team America—the South Park duo's latest film—for Parker and Stone to sign.

Tentatively titled, The Book of Mormon, the show follows a pair of young Mormons on their missionary trip to Uganda. Gad is cast as “Elder Cunningham,” a loveable, misguided Mormon missionary, and a lead in the show. O'Malley is in the ensemble, whose members play missionaries, prophets, devils, hobbits, and others. The show is shrouded in secrecy, and it's far from complete, containing only one act and fewer than 10 songs. At the end of the workshop, they turn in their scripts, and O'Malley is just thankful for the experience: “It'll probably never happen, or it'll be a movie without all of us, but at least I got them to sign my DVD.” Gad heads back to L.A., where more work awaits him, and O'Malley continues working in musicals and plays in New York. Meanwhile, the creative team heads off to write new songs and scenes for what may become a Broadway musical, a motion picture, or an utter waste of time.

About 10 months later, Gad and O'Malley are asked to attend another Mormon workshop. Now there's a complete show—two acts, 16 songs, and new characters, including one for O'Malley, who impressed the creators so much that they developed a part just for him: “Elder McKinley,” a ruddy-cheeked, flamboyantly gay-but-closeted Mormon missionary. He even has his own song, “Turn It Off,” about the “nifty little Mormon trick” of pushing negative thoughts like homosexuality out of his head. The role hits close to home for O'Malley.

When the week is up, the creative team heads off for more rewrites. Still unsure of whether The Book of Mormon will ever be on a marquee, Gad keeps busy as a correspondent on The Daily Show with Jon Stewart, and in a few films, including Love and Other Drugs, starring Jake Gyllenhaal and Anne Hathaway. O'Malley lands a supporting role in a regional production of Pride and Prejudice.

A year later, the phone rings for the third time. The Book of Mormon is heading to Broadway. Would the two former college roommates like to join? Uh, yeah. And so, the two guys who met as nervous freshmen will soon star in a Broadway show together.

The curtains part for opening night on March 24, 2011, and not long after, the critics chime in. The New York Times calls the cast “the best in a musical since ... The Producers” and “the best new musical ... of the 21st century.” Audiences agree, and future shows quickly sell out, currently through late 2012. When the Tony nominations roll in, Mormon leads the pack with 14, including Gad for Best Actor in a Musical and O'Malley for Best Featured Actor in a Musical.

Their intertwined success is almost surreal. “You start flashing back to those first days at CMU, where our moms are moving us into Hamerschlag, and then they're sitting next to each other at the Tonys,”

[View in Carnegie Mellon Today digital archives](#)

A SHINING LIGHT

By Nicholas Ducassi

As the Four Seasons Hotel in Beverly Hills faded away in her rear-view mirror, Sian Heder burst into tears. “I should’ve taken that baby,” she thought.

A decade later, she’s turned those tears into one of the most anticipated feature films of this year’s Sundance Film Festival, “Tallulah,” written and directed by Heder.

Starring Ellen Page (“Juno,” “Inception”) and Allison Janney (“The West Wing,” CBS’s “Mom”), along with Heder’s CMU classmate Zachary Quinto (A 1999) (“Star Trek”), “Tallulah” is so highly anticipated that a week before its world premiere at the Sundance Film Festival, Netflix purchased the worldwide streaming rights. According to “Variety,” industry insiders peg the sale around mid-seven figures.

“Tallulah” follows the story of a young rootless woman (Page) who kidnaps a baby from a neglectful mother. Janney plays a woman who mistakenly believes she’s the child’s grandmother. Though the subject matter seems dark, Heder said it’s a dramatic comedy – though she wasn’t aware of its comedic overtones when she started writing it in 2005.

In the early days of her acting career in Los Angeles, Heder supported herself by working for a company that provided babysitters to guests of prominent Hollywood hotels. One day, she was enlisted to care for a toddler at the penthouse of the Four Seasons Hotel. Heder quickly ascertained that the toddler’s mother had come to the hotel to have an affair, was intoxicated, and didn’t know how to change her child’s diaper. Heder alerted the concierge, who said they couldn’t intervene since the child wasn’t being physically abused. When the gig was finished, Heder hopped in her car and cried all the way home.

She wrote a scene inspired by that experience “almost verbatim,” thinking she had written a tragedy. When she first heard the scene

read aloud, though, those listening burst into laughter – not tears. “I knew there was something to that,” Heder said. “It felt so tragic and could also be so funny at the same time ... the tone of that moment really influenced the film – that’s how it was born.”

Ingrid Sonnichsen, one of Heder’s CMU acting professors from the School of Drama, remembers Heder threading that dramatic-comedic needle beautifully her sophomore year.

“She was working on a scene from ‘Quartermaine’s Terms’ – a comedic play with serious undertones. “She had to cry,” Sonnichsen said, “and she was so intent on playing it truthfully that I finally whispered to her ‘it’s a comedy, dear – fake the crying, it’ll work.’”

Heder gave it a shot, and her new approach cracked her classmates up immediately.

The babysitting scene became the basis of a script for the short film “Mother,” which Heder went on to produce with support from the American Film Institute’s Directing Workshop for Women. “Mother” went on to screen at film festivals in London, Los Angeles, and at the esteemed Cannes Film Festival, and launched Heder’s writing and directing career.

Building on the success of “Mother,” Heder shifted gears from acting into primarily writing and producing. She became a writer for TNT’s sitcom “Men of a Certain Age,” starring Ray Romano, and then a writer and producer for Netflix’s television hit “Orange is the New Black.”

Heder said one of the best parts of her success is that it “put me in a position to hire some of my closest friends – a lot of whom are people I met at CMU.”

During the first season of “Orange is the New Black,” she came across the role of a prison guard named “Pornstache.” Heder immediately

thought Pablo Schreiber (A 2000) (“13 Hours”) would be a genius choice for it.

Not only did Schreiber book the role, his work as “Pornstache” earned him an Emmy nomination for Outstanding Guest Actor.

“There’s a band of Carnegie Mellon people, in LA particularly, that are still very close knit,” Heder said. “Those are the artistic connections that I keep building on, even many years out of school.”

Sonnichsen said it’s no surprise that Sian likes working with friends from CMU.

“In a program as intense as ours, you get to know each other very, very well,” she said.

And not just classmates. Sonnichsen got the call when Heder and best friend Quinto needed an older actress’s voice for a telephone call in a short film called “Dog Eat Dog.”

“I was honored that they thought of me,” Sonnichsen said.

When it came time to cast “Tallulah” – the feature film inspired by “Mother” – she turned to several classmates, including Quinto, Tommar Wilson (A 1999) and Rachel Hardin (A 1999).

In addition to providing her with strong personal and professional networks, Heder says her acting training proved invaluable in her journey as a director and producer.

“My CMU training as an actor helped my communication with actors, period,” she said. “Having been an actor and understanding how vulnerable it is to be on that side of the camera, how unsafe it feels a lot of the time, and how important it is to have a director who understands how to talk to actors is huge.”



So, what’s up next for her now that “Tallulah” is set to stream to Netflix’s 70 million subscribers worldwide? A lot of reading – Heder is on the hunt for her next project, and said she has a long list of scripts to sift through.

Before she can get to them, though, she’s got a Sundance World Premiere to attend.

Editor’s Note: Sian Heder won the Academy Award for Adapted Screenplay for “CODA” at the 2022 Oscars.



SCRIPTING SUCCESS

A short play by Carnegie Mellon alumna France-Luce Benson earns award-winning honors.

By Nicholas Ducassi

Although France-Luce Benson's award-winning literary voice was honed at Carnegie Mellon University, it was birthed across two continents and several countries. Born in Zaire (now Congo) to Haitian parents and raised in Miami, Benson's Caribbean roots reverberate loud-est through her work – especially her play "Risen from the Dough," one of six short plays to win the 2016 Samuel French Off Off Broad-way Short Play Festival, the nation's premier short-play competition.

"Risen from the Dough" begins humbly. On the seventh anniversary of her husband's murder, a Haitian woman kneads dough in the kitchen of her Miami-based bakery. Grief pours through her fingers as she violently slams the dough on the table. Her younger sister enters, fretting about an imminent health inspection that threatens to shutter their business, launching the sisters into a searing confrontation. They slide seamlessly between Creole and English – and crack a few jokes – as they grapple with racism, their past and the struggles of cultural assimilation – all in just 10 minutes.

It's no small feat to be among the festival winners as Samuel French is the world's largest publisher and licensor of plays and musicals, and has published work by the likes of Pulitzer Prize winners Neil Simon and Pittsburgh native August Wilson.

The winning plays – whittled down from more than 1,500 domestic and international submissions – will be published in Samuel French's 41st annual edition of its "Off Off Broadway Plays" collection, and the play will be available for licensing by theatre companies worldwide.

With its muscular dialogue and themes drawn from the immigrant experience in America, "Risen from the Dough" is quintessential Benson, said Melissa Martin, Benson's former graduate screenwriting teacher at CMU's School of Drama. Benson's writing was always "intensely vi-sual, moving ... with a very specific flavor and point of view."

From her very first screenplay, Martin realized Benson "was already a

full-blown writer," and through the program, her voice became clear-er, her storytelling sharper – "she crystallized."

After pursuing a simultaneous acting and writing career in New York City, Benson said she chose to attend CMU's graduate dramatic writ-ing program "to learn the craft – and to study with serious people. I absolutely did both at Carnegie Mellon. I left [after earning her mas-ter's degree in 2008] a much better writer – a confident writer." She has good reason to be confident. She is a two-time recipient of the Shubert Foundation Fellowship. Her play, "Fati's Last Dance," received an Honorable Mention prize from the Kennedy Center (Lor-raine Hansberry Award for Playwriting).

"Fati's Last Dance" was also selected for the Ignition Festival at the Victory Gardens Theatre in Chicago (2008) and was one of four final-ists for the Theodore Ward prize given by Columbia College (2008). Her feature length screenplay, "Healing Roots," was awarded \$10,000 by the Alfred P. Sloan Foundation in 2007.

Regarding Benson's trajectory, Martin predicted that "she's good enough to go all the way – she's that good," and added it's vital that Benson does. "In these unsettled times, it's incredibly important that we hear from women, especially women of color."

"Being a first-generation American, I tell a lot of stories about the im-migrant narrative – that's just such a big part of my life," Benson said.

In addition to the larger themes her plays touch on, like cultural as-similation and racism, she said the immigrant narrative is about "the little sacrifices we make to be in this country. They may seem like nothing, but you're shedding your identity."

Even if her career leads her to television or motion pictures, she said she'll never stop writing plays. Or, as the older sister in "Risen from the Dough" puts it: "I will never forget where I come from."

[View in Carnegie Mellon Today digital archives](#)

CHANGING TIMES

By Nicholas Ducassi

Victor Ng spends his days at work trying to answer one question: Why would someone pay to read The New York Times?

The Times hired the Carnegie Mellon University alumnus in De-cember to be its audience and brand team's senior art director, a position created especially for him.

"Given the plethora of news outlets now available to consumers, many of them free, it's tough," said Ng, who earned his undergrad-uate degree from CMU's School of Design in 2012.

For his first project at the Times, he was part of the team that cre-ated the "Truth" campaign, which included the commercial "The Truth Is Hard" that debuted during the 2017 Academy Awards broadcast. Ng worked on the campaign's digital launch. His latest creations include a pair of landing pages: Why the Times? and What You Get.

"Receiving a strong foundation in typography and color certain-ly hasn't hurt, but for me CMU design was never about chasing current trends or design tools," he said. "I learned to adapt and change with the complex challenges we face today."

Ng began his career as a communications designer at Pinterest, and he served as the lead web designer for Hillary Clinton's 2016 presidential campaign. One of Ng's CMU professors, Dylan Vitone, was impressed by Ng's ambition.

"What I remember most is his desire to get as much out of his time at Carnegie Mellon as possible, to expand his voice as a designer," Vitone said. "He created a magazine, worked as a photographer for nonprofits, pulled together high-end fashion photo shoots and mentored younger classmates."

With the Times intention to double its digital revenue to \$800

million according to its 2020 report – primarily through increasing subscriptions – Ng's mission is integral to the media company's future.

Ng and his team's efforts are paying off. In 2017's first quarter, the newspaper added more than 300,000 digital-only paid news subscrip-tions, the largest quarterly addition ever for the company, and its digi-tal-only subscription revenue grew by 40 percent.

"Victor is focused on solving our biggest challenge," said Laura Forde, the Times' executive creative director of brand marketing. "He has sug-gested new tools and technologies and has encouraged more social interaction among the larger creative team.... He is a wonderful asset to our team and The New York Times design culture."



One of Ng's Designs for the Ford Foundation

[View in Carnegie Mellon Today digital archives](#)

RAPPED UP

Geo Bivins's Journey to the Top of the Charts

By Nicholas Ducassi

Madison Avenue in New York City is one of the world's most famous thoroughfares. It passes through Midtown, the Upper East Side, Spanish Harlem, and Harlem, so plenty of urban stories fill the avenue. In the middle of it all, at 550 Madison Avenue, is the Sony building skyscraper. In a corner office on the 11th floor, with an impressive view, Geo Bivins works—although teenagers everywhere may question whether what Bivins does is actually work, especially on this day.

While Wall Street stock traders scream their buys and sells, Bivins listens to urban hip-hop music—eyes closed, head bobbing. His mind churns: the lyrics, the beat, the hook, the swagger. Members of Bivins' music promotions team surround him, and their heads bob, too.

The recording is by "ASAP Rocky," the 2012 definition of an "undiscovered" musician. The 22-year-old has never released an album, but his three music videos combined have had almost 20 million YouTube views. RCA Records, owned by Sony, signed ASAP to a \$3 million record deal a few months ago, which is why Bivins, RCA's new senior vice president of urban music promotions, is giving a preview of ASAP's debut single, Goldie, his undivided attention. Why should ASAP care about Bivins' opinion? For starters, one of his artists, Usher, has sold upwards of 65 million albums worldwide, won seven Grammys, and generated nearly \$1 billion in revenue.

The song ends. Bivins opens his eyes. "What do you guys think?" he asks his team. "It's hot," says one. "Authentic, New York. He's flowin' his butt off," says another. Bivins agrees: "It sounds like a hit, man, sounds like a hit."

How can he be so sure? The answer to that question goes back in time.

It's the 1970s, and the living room of the Bivins family home is constantly filled with the soul-soaked sounds of legendary funk and jazz bands coming from WAMO, Pittsburgh's urban music station. During one call-in contest for a pair of tickets to an "Earth, Wind & Fire" concert, young George Bivins frantically calls the station every time the DJ announces that the phone lines are open. After he wins his tenth pair, the station staffer tells him that it's time to give some other listeners a chance.

As a teenager, Bivins is obsessed with music—listening to albums on loop until the lyrics become second-nature and spending weekend nights at community center dances to discover the latest artists and newest songs. His paper-route money usually buys records, and by high school, he mops hospital floors to support his music habit.

The janitorial work doesn't just help pay for albums and concert tickets; it also pushes him to double down on academics. "I saw so many people who'd been there for 10, 20 years ... it didn't look pleasant. I didn't want to clean floors for the rest of my life." But after years of forced piano lessons, he knows he's not destined to become a musician. Proficient with numbers and fascinated by computers, he hopes to one day become a data analyst. So, after earning his undergraduate degree in business from the University of Pittsburgh, he enrolls in Carnegie Mellon's Heinz College to hone his data-analysis skills. The two-year urban and public affairs program, predicated on using data to tackle public policy issues, captivates him.

Just before he earns his master's degree in 1983, Mellon Bank offers him a position at its Pittsburgh headquarters. As a graduation present, his parents buy him a round-trip ticket to Los Angeles. Plans change as soon as the California sun hits his face. The beaches, the clubs, and the weather are too enticing. His return ticket goes unused.

Master's degree in hand, he lands full-time work as a data analyst for the City of Los Angeles. In time, though, he realizes the job's not for him. Over the next few years, he lands several well-paying positions in data

analysis, programming, and accounting, but each one proves unfulfilling. He bounces from company to company for almost 10 years until a headhunter contacts him about an auditing and data-security position at the Music Corporation of America (MCA, now NBC Universal).

The job entails programming passwords and auditing inventory data at MCA's record-distribution plants across Europe over three-month intervals. Bivins doesn't even own a passport. Is he interested? Hell yeah!

During the three-week hiatus between gigs, he sometimes flies back to LA. On one return home, he finds himself stuck in traffic. Tuning his car radio to urban music station KDAY, he hears what sounds like the seductive horns of Smokey Robinson's Do Like I Do. But Robinson's voice is nowhere to be found. Instead, a young, husky-voiced rapper speaks about his life, his neighborhood, and gang violence:

I remember we painted our names on the wall for fun
Now it's "Rest in Peace" after everyone...
They say "be strong" and you're tryin'
But how strong can you be when you see your Pops cryin'?

The lyrics of the song, Dead Homiez, by West Coast rapper "Ice Cube," mesmerize Bivins. Every rap song he ever listened to was about hanging out and sex-party anthems and dance songs. They weren't ... this. "These guys are talking."

Bivins isn't the only one listening. It's a volatile time in America. The recession of the late 1980s has been especially difficult for the lower classes, making the American dream seem out of reach. Although it's not at the level of the 1960s, racial undertones are undeniable.

Rap music has changed with the nation's uneasy mood, and songs have graduated from lyrics about poolside lounging to first-person accounts of street life. Many of the rappers are accompanied by the catchy jazz, soul, and R&B songs from their parents' generation but with far different messages than unrequited love. For Bivins, the music speaks to him in ways that the blues and R&B never had, and he realizes he has found his professional calling. After multiple job interviews and resistance from executives who think he's too educated—and therefore not "hip" enough to work in the rap business—he finally lands an internship for urban music promotions at MCA. He shortens his name to "Geo," kicks off his dress shoes, and gets to work.

At its core, music promotions is getting songs heard, which typically means creating heavy radio play by persuading radio DJs to play the songs. The more radio play a song receives, the bigger the album-buying audience. It's not brain surgery, but the truth is, at the age of 32, Bivins is an old man in an industry rife with younger, hipper promoters. If he wants to make it in the industry, he'll need to tap into his Western Pennsylvania work ethic.

He takes to the streets, street promotions to be specific, which means increasing a song's audience from the ground up by getting it heavy play in clubs. Once a song gets hot there, people call radio stations to request plays, magnifying the promoter's daytime efforts. So, every night, Bivins heads out to clubs armed with cassettes and vinyl records. He passes out as many as he can carry, making sure to hand the club DJ copies, too. He averages three clubs per night, sometimes seven days a week. And whenever he can squeeze in the time, he stops everywhere from hair salons to gyms, dropping off more music.

The effort pays off. Several songs Bivins represents climb the charts simultaneously. Soon, the work is going so well that he and a colleague

start a private street-promotions company on the side called "Sammy Van Gogh," because they've "always got an ear to the streets." Business booms.

In early 1994, an Arista Records executive asks Bivins if he'd like to street-promote the debut single, Juicy, by a new artist known as "The Notorious B.I.G.," or simply "Biggie." Biggie is a 21-year-old rapper from New York City with a sizable following on the East Coast. He's virtually unknown anywhere else. Can Bivins change that?

On his first listen, he knows Biggie is special. The album, Ready to Die, uses almost 50 samples of songs from artists like James Brown, Miles Davis, and The Jackson 5, in tracks that weave autobiographical street poetry into buoyant party beats. What's unique is that Biggie sings many of the choruses, a concept known as "singing hooks," unlike other rappers who let the sampled songs or other vocalists perform the choruses. The singing hooks make it "more melodic, more radio friendly," says Bivins.

Much like the first time he heard Ice Cube on KDAY, Bivins is impressed with Biggie's lyrics. In Juicy, Biggie relates his dreams of moving out of the New York City housing projects:

Lunches, brunches, interviews by the pool/
"Considered a fool 'cause I dropped out of high school/
Stereotypes of a black male misunderstood/
And it's still all good/
... We used to fuss when the landlord dissed us/
No heat, wonder why Christmas missed us."

It's up to Bivins to turn Biggie into a West Coast sensation, but it won't be easy. Not only is Biggie unknown outside New York, but Bivins is trying to break him into the market amid a rivalry between West Coast and East Coast rappers. It sounds senseless that musicians from different coasts would take issue with each other based on geography, but remember that many rappers grew up amid poverty and gang violence. Surviving meant fierce neighborhood loyalty.

Bivins isn't intimidated. He organizes a two-week promotional tour of the West Coast for Biggie, complete with club performances, lunches with record-store owners, radio interviews, and appearances at skate parks and community centers. At one of those mid-tour afternoon jaunts, a crowd of teenagers eagerly awaits meeting Biggie, but the rapper is holed up inside his van, uneasy about glorifying guns and violence to high-school kids.

"I'm not a role-model, man," he tells Bivins. "My music is not role-model music."

"Well ... tell them about what to avoid," says Bivins.

"OK ... I can do that," Biggie replies, and he exits the van.

The tour's days are long—often starting as early as 7 am, when Bivins picks Biggie up at his hotel, and sometimes lasting until nearly dawn when Bivins drops him off. Soon, Juicy becomes as hot in Los Angeles as it was in New York. The album, Ready to Die, receives widespread critical acclaim, gets several Grammy nominations, and achieves quadruple-platinum status (over four million sales). After years of West Coast rap dominance, Biggie has almost single-handedly swung the hip-hop pendulum back to the East Coast.

One night, before an LA concert, Biggie invites Bivins into his trailer.



In front of several close friends, the rapper proclaims, “Anybody who said that they broke my record on the West Coast is lying. This is the guy who did it,” he says of Bivins. “You told me it was gonna break. ... Thank you.”

With Biggie’s success, Bivins captures the attention of the country’s biggest music labels. He’s soon hired as the West Coast promotions manager for Jive Records, where he promotes some of the most popular urban music artists—among them R. Kelly, KRS-One, and Aaliyah. During Bivins’ tenure, he helps sell nearly 20 million albums.

By 1996, the coastal rap rivalry has escalated, particularly between Biggie and West Coast rapper Tupac Shakur. The bravado and raw emotions of their lyrics turn personal—and public—as the rappers battle each other through their lyrics. In one song, Shakur insinuates that he slept with Biggie’s estranged wife, and when Shakur is shot dead in Las Vegas in late 1996, rumors swirl of Biggie’s involvement.

Just months later, Bivins is named Jive Records’ southeast regional urban music promoter, a position based in Atlanta, Ga. As Bivins arrives in Atlanta after a 2,000-mile drive, his cell phone rings: Biggie, the man Bivins helped launch to superstardom, was murdered in a drive-by shooting in Los Angeles. “I really don’t know why it came to that,” Bivins says. “I knew that it was dangerous because I could see it ... but I never thought it would come to murder.” Both crimes remain unsolved.

A few years and several top 10 songs and multi-platinum albums later, Bivins is one of the country’s most powerful promoters of urban music; in the early 2000s, Capitol Records—not considered a major player in urban music—hires him to help overhaul its rap and R&B reputation. He works quickly, launching an unknown rapper named “Chingy” and his debut album, Jackpot, to triple-platinum status. In 2004, Capitol releases Chingy’s sophomore album, Powerballin, and awaits a tidal wave of revenue.

It never arrives. Powerballin sells only 40,000 copies its first week, compared to Jackpot’s 300,000 first-week sales. Bivins is stunned. Powerballin’s debut single has an audience of more than 150 million. What happened? Internet piracy happened. By 2004, Chingy fans—along with millions of music lovers across the country—realized that instead of shelling out nearly \$20 for a CD, they could download it for free. Music labels begin losing billions of dollars. Lawsuits against piracy sites abound, staffs are laid off, and the entire business appears on the verge of collapse. Bivins may need to find a new career.

But relief soon arrives. The Web-based store iTunes, launched in spring 2003, starts to take off. By July 2005, it has sold 500 million songs. Additionally, the industry’s lawsuits gain traction in the courts, shutting down the most popular piracy sites.

Along with iTunes, the Internet’s emergence ushers in more good news for Bivins. It gives him the ability to accurately track music sales, radio plays, online video hits, even what songs are playing nationwide in real time. He starts receiving dozens of reports daily on his portfolio of songs. “Nowadays, you can’t just be the guy who can talk the fastest and be the slickest. You’ve got to also be the guy who can sort through the information.”

Because of the data-analysis skills he acquired at Carnegie Mellon, he says, he was well positioned to adapt to the new promotions model: “The Internet was our worst enemy. Now it’s our best friend. It’s the new street.”

Urban music is now a titan in American—and global—culture. Many of its stars have become entrepreneurial moguls, dipping their hands into everything from clothing lines and footwear to restaurants and sports teams. “Hip-hop is everybody now. Kids these days grew up on rap. Commercials include rap. Movies include rap,” Bivins says. “Everything is about hip-hop. It’s music—but it’s also a lifestyle.”

In his latest role at RCA, Bivins has a roster that includes artists like Alicia Keys, Usher, R. Kelly, and Pitbull, who together have won more than a dozen Grammys and sold more than 200 million albums. Urban music and culture will be big business for the foreseeable future—in 2011 alone, it generated nearly \$10 billion—which means artists like ASAP Rocky can have quite a payday if they make it. Right now, though, he’s just another young dreamer counting on Bivins to get his music played.



SNEAK PREVIEW



By Nicholas Ducassi

Leslie Odom Jr. and Christian Borle Have Reason to Sing

Stacks of sheet music lie atop a grand piano as Christian Borle plunges into the first few chords of a jazzy melody. He shoots a smile at the handsome man beside him, Leslie Odom Jr., who croons: “No need to beg, steal or borrow – the future is looking bright! Yes, I’m laying eyes on tomorrow – so let’s start tomorrow, tonight!”

Although the two Carnegie Mellon University alumni shot the scene while filming “Smash,” the short-lived NBC series about a fictional creative team in pursuit of a Broadway hit, in reality, Borle and Odom are Broadway royalty.

Borle and Odom helped to guide the hit musicals “Something Rotten” and “Hamilton” respectively, to critical acclaim before taking their final bows in July. The shows will soldier on without them, and the departing stars’ futures – which include two back-to-back Broadway shows for one and a solo music career for the other – look bright, indeed.

Before playing William Shakespeare in the musical comedy “Something Rotten,” the resume of Borle, a 1995 alumnus of CMU’s School of Drama, boasted eight Broadway shows and a Tony Award for Best Actor in the 2012 play “Peter and the Starcatcher.” His work in “Rotten” earned him his second Tony Award for Best Featured Actor in a Musical in 2015.

Now, Borle is preparing for his next two projects. First up is the Broadway revival of the musical “Falsettos”, opening this fall, which follows Marvin (Borle) as he navigates the 1980s AIDS crisis in New York City. “Falsettos” has a limited run, and in 2017, Borle will become candy man Willy Wonka in the Broadway premiere of “Charlie and the Chocolate Factory.”

His diverse roles are a testament to Borle’s range said Don Wadsworth, head of the School of Drama’s acting option.

“He’s an incredibly strong, imaginative actor who’s also incredibly brave – he’s got real range, and his career shows that,” Wadsworth said.

Borle, who grew up in the Pittsburgh area, spoke to the local NBC affiliate, WPXI-TV, of his fond memories for his college days and his hometown. “I miss it terribly. I just loved growing up there and going to school there,” he said.

Odom, a 2003 School of Drama alumnus, is no stranger to Broadway himself, having made his debut as an ensemble member in “Rent” when he was just 17, before enrolling at CMU. After nearly 15 years of mostly film and television work, he joined the smash Broadway-hit “Hamilton” as protagonist Aaron Burr. With a 2016 Tony Award for Best Leading Actor in a Musical and a Grammy Award for Hamilton’s soundtrack – not to mention profiles in The Wall Street Journal and The New York Times, Odom, as Burr, has shot Alexander Hamilton for the last time.

Rather than leap into another Broadway show, Odom will embark on a solo singing career. He signed a four-record deal with S-Curve Records and released a self-titled jazz album currently boasting a five-star rating on I-Tunes.

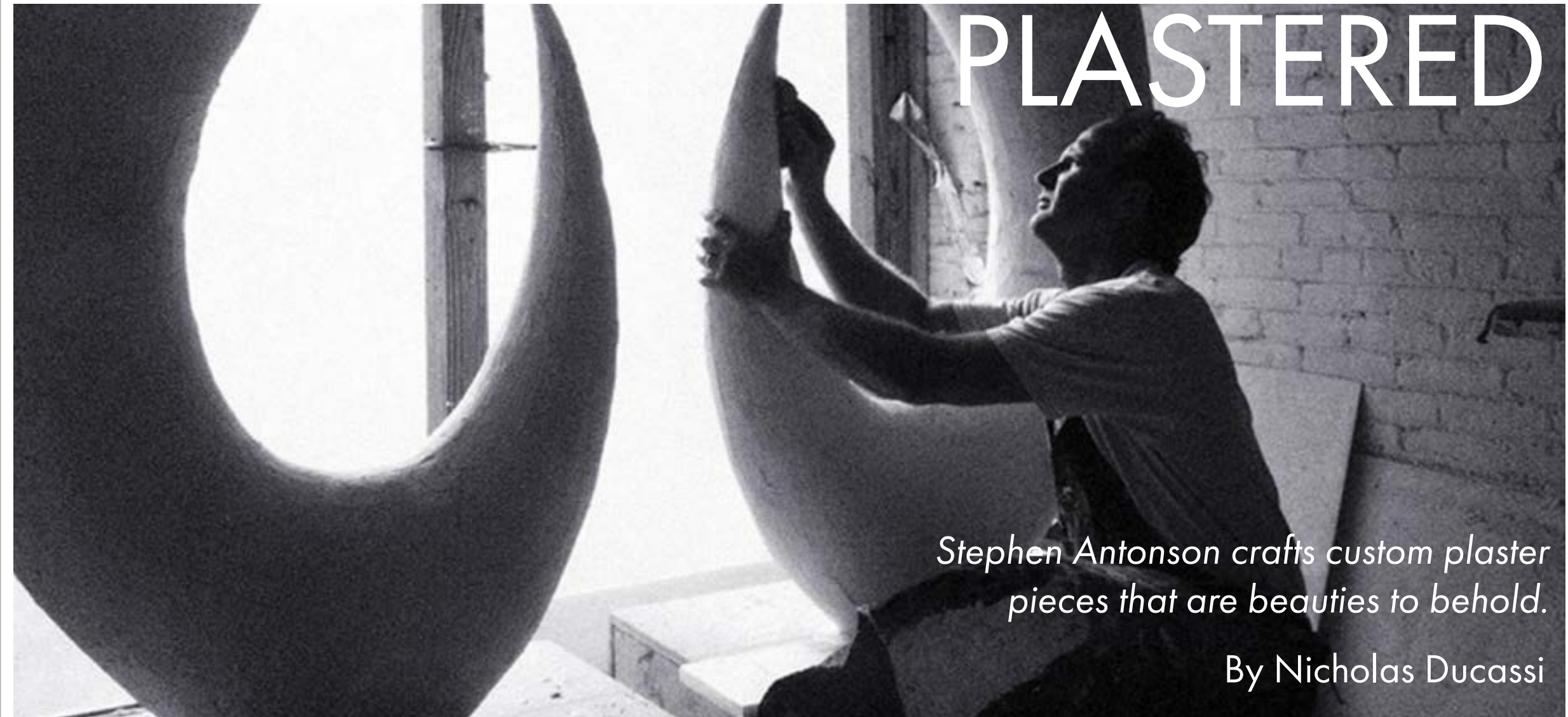
“I have a couple of checkpoints where you achieve a childhood dream and you’re forced to wipe the slate clean and dream a bigger dream,” he said, as he plans to spend the foreseeable future devoted to music.

The two alumni may not be singing together again just yet, but given their star power, it may just be a matter of time.

[View in Carnegie Mellon Today digital archives](#)



PLASTERED



Stephen Antonson crafts custom plaster pieces that are beauties to behold.

By Nicholas Ducassi

Stephen Antonson’s chandeliers hang in elegant homes across the globe. His tables are in President Barack Obama’s private residence. His designs sell for tens of thousands of dollars.

The Michigan native has come a long way since graduating from Carnegie Mellon University’s School of Art, yet he still makes his stunning plaster furniture and furnishings the same way he worked as a student: “On my hands and knees, mucking around.”

Antonson’s Brooklyn-based studio is a testament to his playful, messy methods. On any given afternoon, the concrete floor is covered in a layer of white dust, the result of Antonson’s sanding the snow-white chandeliers, lamps and tables that have put him on the art and design cognoscenti’s map.

Louis Bofferding, one of Manhattan’s premier fine art dealers, has visited Antonson’s studio, and describes the artist’s atelier “like the abandoned dacha of Dr. Zhivago.”

Indeed, one of Antonson’s first designs was a chandelier dripping with icicles, each one attached and plastered by hand. It’s the human touch that distinguishes his pieces. In an Architectural Digest profile of him appropriately titled “White Magic,” writer Mitchell Owens describes how Antonson “transforms humble plaster into objects of surreal beauty.”

“I am an artist,” Antonson said. “It just so happens that I also design objects that are functional.” He credits having studied “everything – painting, welding, photography, video, you name it” at CMU’s School of Art, where he earned his degree in 1989, for his ability to marry art and design. The results are chandeliers and sconces that the blog Remodelista describes as items “that Gertrude Stein might have hung in her Paris salon to illuminate her Picassos.”

It’s a lofty compliment, yet Antonson is quick to point out that he spends his days working with his hands, thus the company name “Stephen Antonson By Hand.” He touches every single piece before it

leaves his studio, starting with a sketch and ending with a work of art.

Once he is happy with a pencil drawing, he assembles the wood, clay or metal frame that will form its skeleton. Later, he paints on the plaster – a milky liquid when wet – with a brush, allows it to dry and finally sculpts and sands it to a smooth, matte finish. He repeats the painstaking process dozens of times, creating pieces simultaneously, sanding and sculpting some while others dry.

While his designs can take weeks and even months to complete, his process ensures that each piece is distinctive, down to the imprints of his fingers left on the surface.

“It separates me from the crowd,” he said. “People can see those marks and say, ‘Wow, this person was right here.’” His plaster work sometimes goes beyond furniture, such as a recently commissioned pair of six-foot tusks, which now resides in a glamorous Las Vegas hotel lobby.

He gives much credit for his innovative work to lessons learned at CMU. “My painting professor, Susanne Slavick, really pushed us to fail spectacularly. She told us that the more we failed, the better grade we’d get, and it really loosened everybody up. It was genius. Any successful cook, writer or businessperson will tell you the same thing. It comes down to innovation – the people who listen to the feedback from the process of failing are the ones that succeed.”

Slavick, the Andrew W. Mellon Professor of Art, remembers Antonson’s willingness to take risks and his witty disposition. Both were on full display during Pittsburgh’s 2010 Three Rivers Arts Festival, where Antonson deployed an outsized inflatable of Andrew Carnegie in snorkel and mask, titled Sink or Swim, in the Allegheny River.

“Stephen infuses his creations with both elegance and humor,” Slavick said. “whether they are functional or winsomely absurd.”

[View in Carnegie Mellon Today digital archives](#)

GRIDIRON DEMENTIA



How Dr. Bennet Omalu Changed the Game of Football

By Nicholas Ducassi

Bennet Omalu knew he had to move fast. The neuropathologist left his Lodi, California home at 3am on that spring day in 2012, was on a plane two hours later, and arrived at the San Diego medical examiner's office by 7am. Waiting for him on a metal table was the body of one of the greatest, hardest-hitting linebackers to ever play in the National Football League: 20-year veteran and future Hall of Famer Junior Seau.

The day before, Seau's girlfriend discovered his body in the bedroom of his San Diego home. He had a single gunshot wound in his chest, and a .357 magnum by his side. That afternoon, Omalu called the medical examiner to offer his assistance with examining Seau's brain and for the medical examiner to introduce him to the next of kin for consent. Omalu was connected to Seau's son, Tyler, who gave Omalu permission to examine his father's brain. Omalu booked a flight.

Seau was a 12-time NFL All-Star, started a foundation to help troubled youths, and was active in his community. But from press reports, it was clear his life had spiraled downward since he retired from football two years earlier. He was arrested for domestic violence, totaled his SUV, and gambled away millions of dollars. Friends said the charismatic Seau became depressed, aggressive, and self-destructive. Now, at age 43, he was dead. Why did someone who had so much to live for choose to die?

Omalu believed the answer lay in the soft folds of Seau's brain tissue, but he needed to take it back to his lab to be sure. It wouldn't be easy—six organizations, including Omalu's Brain Injury Research Institute, requested to examine Seau's brain, but Omalu was perhaps the most qualified: He was the one who discovered the neurodegenerative brain disease, which he named chronic traumatic encephalopathy (CTE). He had tied it to football's punishing blows, what he called "gridiron dementia."

As Omalu prepared to take Seau's brain back to his lab, the chaplain for the medical examiner's office walked into the room with problematic news. Seau's son, Tyler, just called to recant his consent: his father's brain wouldn't be leaving with Omalu after all. Later, PBS' "Frontline" documentary series reported the San Diego Chargers' team doctor had called Tyler and told him that Omalu didn't know what he was doing.

In the cab on the way back to the airport, Omalu wept. How many more lives lost or published peer-reviewed papers would it take before CTE would be taken seriously?

Omalu's tenuous relationship with football began 3,000 miles away a decade earlier, in the crypts of the Allegheny County medical examiner's office. There, in 2002, the 34-year-old physician—just a few months removed from earning his neuropathology specialization at the University of Pittsburgh—performed an autopsy on retired Pittsburgh Steelers offensive lineman Michael "Iron Mike" Webster.

Webster spent 14 years at center on a team that would win four NFL championships in six years, a feat no other NFL team has done in the Super Bowl era. Like many of his teammates, he was a Pittsburgh hero, a Hall of Famer, and like Seau, he was a husband and a father. And just like Seau, his life disintegrated after football. His sad story was well chronicled: He spent his final years living in a pickup truck, tasing himself to sleep and supergluing his teeth back into his mouth. At the age of 50 – divorced and bankrupt – he died of a heart attack. For nearly six months, Omalu worked as a medical examiner during the day and stared into microscopes at Webster's brain tissue at night. He would discover tau protein in quantities normally seen in the brains of demented 80-year-olds or multiply concussed boxers. Tau protein is like sludge in an engine, and it can cause memory loss, aggression, and depression. A heart attack may have killed Webster, but Omalu realized it was a tau-riddled brain that robbed him of any quality of life.

What was the cause? Webster, still middle-aged at the time of his death, never boxed. Moreover, his brain didn't look like that of a former boxer. Outside, it wasn't atrophied or bruised. Inside, the tau deposits were in different areas of the brain than were typically found in boxers. Omalu surmised he had discovered a related—but different—disease, caused by repeated blows to the head Webster sustained during his storied career. He shared his findings with established colleagues, who concurred; his science was sound, even groundbreaking.

He dubbed the medical condition chronic traumatic encephalopathy, which he says is scientific terminology for "a bad brain that suffered trauma for a long time." Knowing the public might have difficulties with the term's pronunciation, he emphasized the acronym: CTE.

That kind of marketing-driven thinking prompted Omalu, already an MD and MPH, to pursue graduate studies at Carnegie Mellon's Tepper School of Business. The neuropathologist sensed that because of the immense popularity of football, he could be cast as a villain, which meant he needed to better understand the workings of the business world, so CTE wouldn't be callously dismissed.

By 2005, the NFL was almost a century old. Its television contracts brought in billions of dollars, its games dominated television ratings, and its annual championship, the Super Bowl, was a worldwide spectacle, watched by more than 100 million people. But a century of success also meant a century of players who could have suffered—and might still be suffering—from CTE.

Nevertheless, did Omalu really want to take on the NFL? Deeply religious, he says he considers his intellect a gift from God. It took him from his native Nigeria to the United States and carried him through school. With that gift, he surmised, came an obligation: Use all he learned "for good."

He would take on the NFL. "I was young. ... I wanted to change the world," he says. He submitted an article, "Chronic

ic Traumatic Encephalopathy in a National Football League Player," to the peer-reviewed scientific journal *Neurosurgery*. In a ringing endorsement of the young doctor's research, the journal published it in 2005.

His claims seemed to ring hollow, however, to several doctors on the NFL's payroll. They wrote to *Neurosurgery* demanding they retract Omalu's article on the basis of it having "serious flaws." *Neurosurgery* published the objections but refused to retract Omalu's paper.

By then, he had already acquired a second brain. It belonged to Terry Long, another former Steeler, whose life had regressed into a tangled web of erratic behavior and suicide attempts, ending when he drank antifreeze at age 45. Omalu examined his brain and found CTE. He submitted a second paper to *Neurosurgery*. Again, it was approved by his peers and published, followed by objections. But this time neuroscientists unaffiliated with Omalu had acquired brains of retired football players and were discovering the same blotches of tau protein. Some even found evidence of CTE in deceased high school football players.

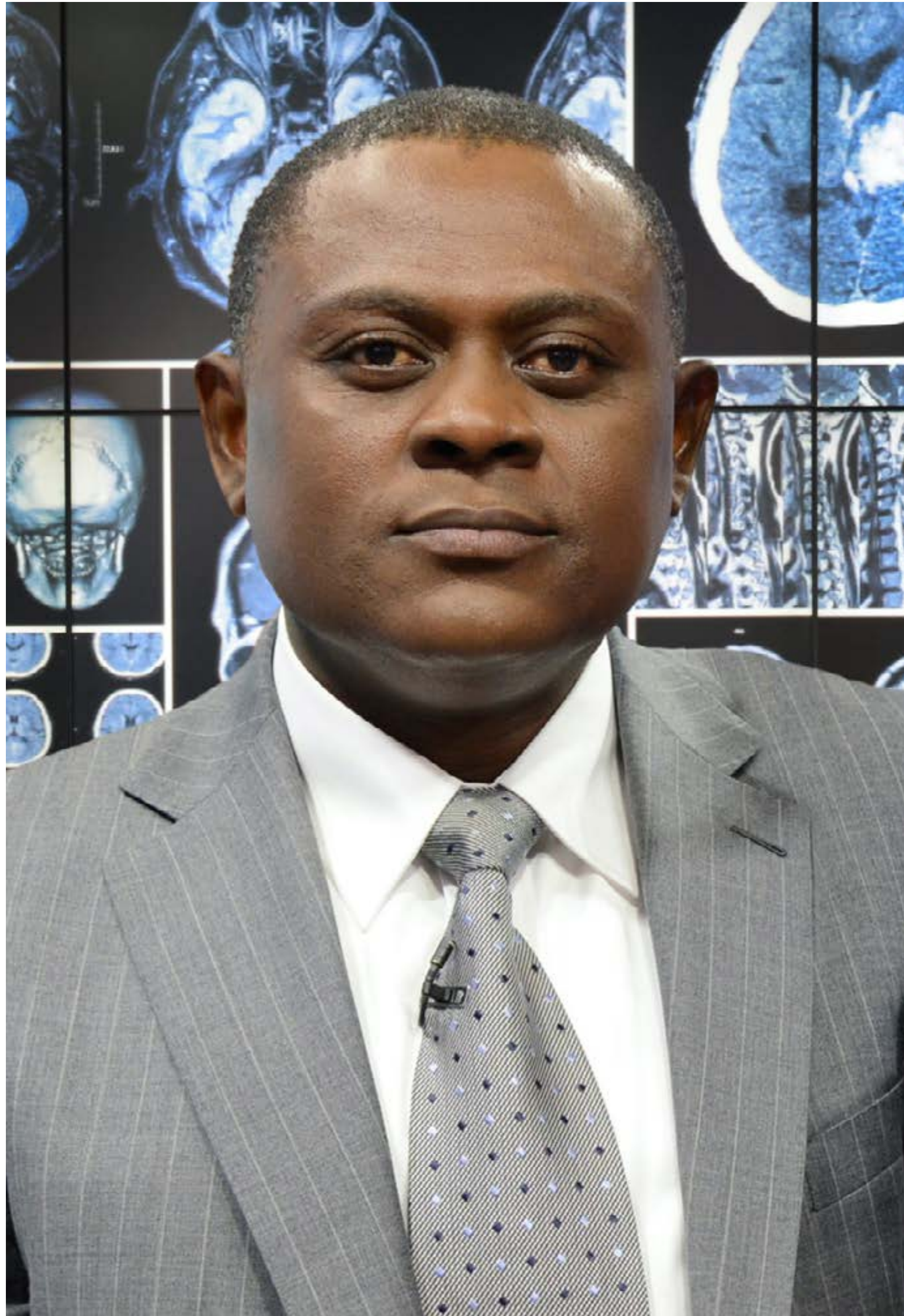
Omalu says he hoped to work with the NFL to determine how best to proceed to protect players from CTE, but that didn't happen. "The NFL made me feel worthless," he says, mincing no words.

He says he felt like the biblical character David in David and Goliath. Yes, he thought, I will be David because this is bigger than me. He was fighting not for himself; he was fighting for thousands of fathers and husbands, who were members of the community—men who he thought deserved better. So, he would arm his slingshot with some modern-day ammunition: a lawsuit.

"I had to go to a lawyer who was young," recalls Omalu. One who "was not yet established but was hungry." He turned to 30-year-old Jason Luckasevic, a personal-injury attorney for whom Omalu had worked as an expert witness. Luckasevic began interviewing retired NFL players with potential brain damage and would eventually file a lawsuit against the NFL on behalf of 75 of them.

All the while, Omalu continued his research into CTE. When he found it in the brain of Andre Waters—a 44-year-old former Eagles safety who put a gun in his mouth and pulled the trigger—the national press came knocking. In early 2007, *The New York Times* splashed Omalu's name on its front page, next to the headline: "Expert Ties Ex-Player's Suicide to Brain Damage." The phrase "concussion crisis" soon caught on.

As Omalu's national exposure increased, what he learned at Tepper while studying to earn his MBA in 2008 helped give him insight into the NFL's executive's mindset—how to take emotion out of decision making. "The more I studied, the less emotional I became. ... I was very emotional about the plight of the players, but my Tepper classes taught me that the NFL is a business, and its objective is to make money. It



enabled me to see their point of view, that their players were assets to them, so I could then respond accordingly, while trying to save their assets' lives."

By 2007, the NFL appeared to be coming around. That summer, it convened a concussion summit for team doctors and independent scientists, launched a longitudinal study, and gave players a pamphlet titled: "What Is a Concussion?"

Curiously, the NFL didn't invite Omalu to the summit. That longitudinal study? It wouldn't be finished for another four years—at least. That concussion pamphlet? It didn't mention Omalu's name or his findings, and it stated: "Current research ... has not shown that having more than one or two concussions leads to permanent problems if each injury is managed properly." Omalu, in shock, felt disrespected.

Attorney Steve Marks, one of the lawyers who joined Luckasevic in the lawsuit filed in 2011, says the pamphlet was one of the NFL's biggest missteps: "The problem wasn't that the players were getting injured, it was that they hurt their heads, and the NFL told them it wasn't a problem."

In contrast, media reports started to surface about the dangers of concussions, and, in 2009, GQ magazine published a damning 8,000-word article titled "Game Brain." It lauded Omalu and his colleagues' work and detailed how playing in the NFL had destroyed several of the very men who had helped make the league so successful. The article was the basis for a motion picture, "Concussion," which is scheduled for a Christmas 2015 release. Omalu will be portrayed by movie star Will Smith. Other members of the cast include Alec Baldwin, Albert Brooks, and Gugu Mbatha-Raw.

The lawsuit that Omalu helped spark swelled into a class-action case with more than 5,000 players and resulted in a settlement that may end up costing the NFL more than a billion dollars.

But the settlement didn't settle everything. Players were given the option to opt out of the class-action suit and file on their own. After the National Institutes of Health confirmed the presence of CTE in Seau's brain, that's exactly what his family did. Dozens more have done the same. Those lawsuits are still pending.

And current players are taking note, too. ESPN has reported that San Francisco 49ers linebacker Chris Borland, one of the NFL's top rookies this past season, was retiring because of concerns about the long-term effects of repetitive head trauma.

Omalu says that things might have turned out differently for the NFL—at the very least from a publicity perspective, if senior management had followed the principles Omalu learned at Tepper Business School: "Rather than dismissing and attacking me," says Omalu, "they should have embraced me, they should have said, 'Look, you obviously beat us to it. Let's work together.' They would have enhanced their brand and controlled their message. ... They should have studied business management classes at Carnegie Mellon—so they could have learned what I learned."

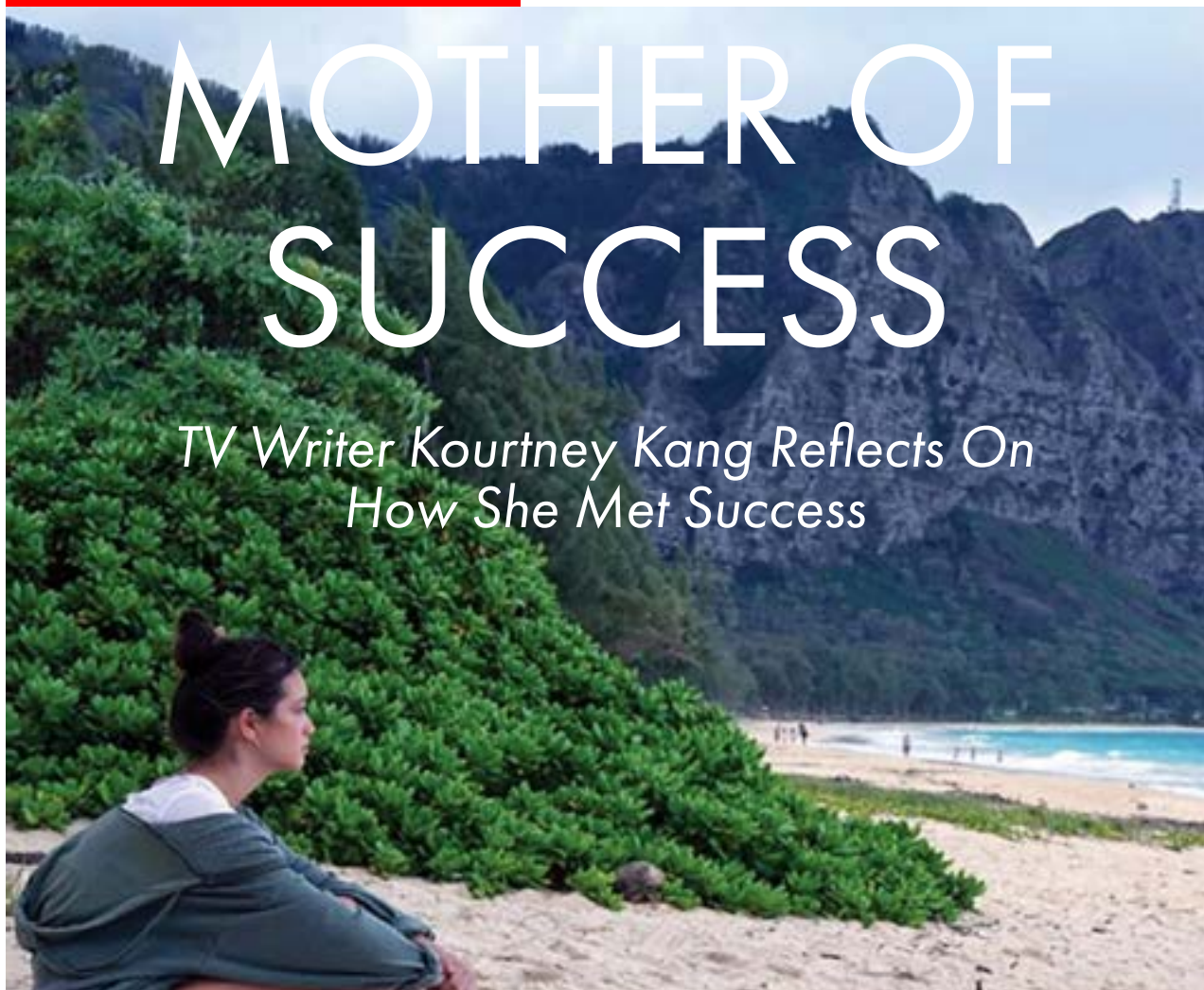
But, ultimately, Omalu says it's not about who won or who lost; it's about modifying the sport to make sure that one day retired NFL players can live long enough to meet their grandchildren, sit them on their laps, and tell them about the game they played.

Carnegie Mellon, the birthplace of artificial intelligence and cognitive psychology, has been a leader in the study of brain and behavior for more than 50 years. The university recently launched BrainHub, which is a global initiative that focuses on how the structure and activity of the brain gives rise to complex behaviors.

Learn more: www.cmu.edu/research/brain

MOTHER OF SUCCESS

TV Writer Kourtney Kang Reflects On How She Met Success



By Nicholas Ducassi

The production assistants scurry around her, walkie-talkies strapped to their hips, stress pursing their lips. It wasn't so long ago—only a few years, really—that Kourtney Kang would've killed to be in their shoes, happy to fetch coffee, make photocopies, be the punching bag, anything to get her foot in the door.

But this fine morning in 2004 is the biggest day so far in her young career. Kang (A'00), a scriptwriter, is on the set of the fledgling NBC sitcom *The Men's Room*. She's only minutes away from watching the episode she wrote actually come to life in front of the cameras. She's nervous—and she should be. It's not her first time writing for television. But her other two shows were both cancelled before her scripts were taped. Today, she'll finally see one of her episodes through.

As she stands on the upscale living room set, her phone rings. It's her parents. They've flown in from Philadelphia to root their daughter on, and they're just pulling their rental car up to the studio gate. Kang hangs up when she notices the executive producers walking onto the set. That's strange, she thinks. The room hushes to a halt. Perhaps they've also come to wish her well?

Not so. If this moment were a carefully crafted slapstick rather than Kang's own life, this is when she would be walking along, perhaps whistling, blithely unaware of the banana peel she is about to step on—the one that will upend her big day, the one that will again throw her career into a spin.

With the entire team assembled, the producers drop the bomb. The show's been cancelled. They'll film the episode, but it has almost zero chance of ever hitting the air. Somewhere in the universe, a needle scratches a record.

And if the banana peel has launched her into the air, here's her painful pratfall. She has to tell her parents the bad news and watch the buoyant looks on their faces vanish. In a response that might prove fodder for some future script, Kang's mother tries to take in the enormity of the news. She's dealing, of course, not only with her own disappointment, but her worries for her daughter. It's too much. So instead, she scans the lavish living room set, focusing on more imme-

diately practical matters. "But what are they going to do with all of these beautiful lamps?" she asks in a bewildered tone. "Mom, everyone here just lost their jobs," Kang replies. "I just lost my job."

"But, I mean ... are they just going to throw them away?" her mother persists. Indeed, they even fired the lamps. Don't worry, green friends, the lamps have most likely popped up on a few sets since then. Old props don't die; they just fade away—at least until it's time to brighten another scene.

For Kang, now what? She wanted so badly to work on a sitcom—having been obsessed with them since before she was old enough to truly understand their jokes. The *Golden Girls* and *Growing Pains* were her favorites, and she spent her childhood back east thinking up ways to tweak their dialogue and storylines. In fourth grade, she even took a red pen to A Charlie Brown Christmas—new scenes and all. School administrators actually discussed mounting it before copyright concerns scuttled the notion. Good grief.

Then, at age 21, to the surprise of no one, she packed her television into her two-door coupe and moved to the West Coast. She had no connections, in a land that survives on them.

She found a waitress job to support herself. Every day, she drove past Fox Studios and wondered what magic she was missing. "I was so close and, yet, miles away," she says. By now, it was the mid-1990s. After months of knocking on locked doors, it was clear that she needed to resort to a Plan B. So, she sent her full-length play, *For Real*, along with her application, to a few graduate schools. A few weeks later, she received a call from the head of Carnegie Mellon's dramatic writing program, Milan Stitt.

He was impressed with her play. They chit-chatted for a while, and after the conversation, Kang called her mom and told her she was moving back east to go to school. There was one caveat she didn't mention. Stitt hadn't officially invited her. When they talked again the next day, her age came up.

"You know, I usually only take in older writers," says Stitt. Kang can't quite remember what he said after that; she was too busy

figuring out a way to keep the CMU door from slamming shut. "Look, Milan, there's a mother in Lansdale, Pennsylvania, who thinks that I got into Carnegie Mellon for graduate school," she tells him. "If you're not gonna let me in, that's fine. But I'm not gonna tell her. I can give you her number, and you can tell her."

Whoa.

Stitt laughed—and offered her a place in the program.

The following fall, Kang realized why age was more than just a number to Stitt. "I was the youngest person in the class by about a decade," she remembers. "The other playwrights had been living in New York and seeing theater for years. I started so much further behind than everyone else."

But Stitt was generous with his hard-earned pearls of wisdom. He wasn't the smartest or the most talented in his Yale graduate class, he would tell the students, but he was the only one to get a show to Broadway: "It all comes down to who wants it, and who is willing to work."

Kang wanted it. "Most of the time, honestly, I felt lost," she remembers. "I completely sucked at a lot of things. But I wouldn't let it beat me."

As her 2000 graduation day approached, Stitt suggested she start her career in New York, believing her voice might be ripe for Broadway one day. But she couldn't shake the feeling that the only thing waiting for her in the Big Apple was more waitressing. So she ventured out to Hollywood once more. For the first six weeks, she emailed résumé after résumé and slept on a friend's couch. Finally, she snagged an interview for a production assistant job. Perfect, or so she thought.

"They told me I was too qualified," she says. "I was devastated. And broke. She couldn't even write sample scripts because she couldn't afford to get them photocopied. She had just enough money to drive back home.

But she says her time at Carnegie Mellon taught her more than the works of Ibsen or Strindberg. It taught her the art of perseverance. "I was like one of those boxing dolls. I kept getting kicked down, but I'd just pop right back up," she says. "After surviving that boot camp, I felt like I could do anything."

Sticking it out paid off. She was hired as actor Michael Chiklis' assistant on a new show. Within a few episodes, though, NBC stopped airing it. They decided to film the rest of the season's episodes in hopes of running them at a later time, but Kang's position was now irrelevant.

For reasons she still doesn't understand, though, they kept her onboard. Instead of getting bored, she soaked it all in. "I would sit on the set and just watch," she says. "The scripts would change every day, and I would try to figure out why."

When the episodes wrapped, Kang landed another assistant job, this time in the television literature department of a Hollywood agency. It was grueling. "A lot of getting yelled at, mostly for no reason," she says. But spending her days on the phone with studios and writers gave her a bird's-eye view of the business.

Never losing sight of her goal to get established as a writer, she landed a spot at a sitcom. But practically before the ice melted in the punch-bowl, the party was over—the show was cancelled after only a few episodes. Now, like a bad summer repeat, she is living through the same scenario again with *The Men's Room*.

Is it her? Is she the reason the shows tank? Kang doesn't go there. "I was too naïve to get discouraged," she says.

So, when the next pilot season rolls around, Kang peruses dozens of scripts. As soon as she reads the pilot for a show called *How I Met Your Mother*, she's hooked.

The sitcom follows Ted Mosby (portrayed by Josh Radnor) and his group of friends through the Manhattan dating labyrinth. It might sound like plenty of other shows, but it has an ingenious structure—it's a flashback from the year 2030, as Ted recounts to his teenage children a convoluted tale of how he met their mother.

When Kang's agency tells her that the show's creators are leaning toward selecting other writers, she replies, "Keep pushing!" Sure enough, after a few of the first choices don't pan out, she's hired as a staff writer. "I chalked it up to sheer will," she says.

The show debuts in 2005 to solid ratings, and Kang finally gets to see her first episode hit the air. But it's her season two "Slap Bet" episode that cements her arrival as one of Hollywood's freshest voices. The episode follows the quest to uncover why group member Robin (Cobie Smulders) refuses to go to malls. When Barney (Neil Patrick Harris) shows up at Robin's apartment with a video, Robin protests: "I was really young. ... It started as an innocent modeling job!"

At first, the video appears to be a cheesy porn film. Robin, in a horrendous blonde wig, asks her teacher whether there's anything she can do to improve her bad grade. But things go in a completely unexpected direction when, rather than disrobing, she offers to sing him a song. Turns out Robin's secret is that she spent a year touring Canadian malls as "Robin Sparkles," a teenage pop star, and that this is the music video for her hit, "Let's Go to the Mall!" featuring plenty of '80s sparkle graphics and group dancing.

"Put on your jelly bracelets!/And your cool graffiti coat!/At the mall, having fun is what it's all about." (Yes, aboot. She's Canadian, after all.) When one character notes, "This was in the '90s. Why does it look like 1986?" Kang's understated humor shines. "The '80s didn't come to Canada until like '93," Kang has Robin reply.

"Slap Bet" was recently named to TV Guide's "100 Greatest Episodes of All Time."

Kang might've slipped on her share of banana peels along the way, but she says her valleys were definitely worth this peak. "I get to write something like 'Robin has a jean jacket that is bedazzled with sparkles,' and then get to see it come to life," she says. "To dream up this thing in your apartment and then have an entire team to help make it happen—it's just awesome."

The show completed its ninth and final season this spring, a stretch of 208 shows that saw Kang rise to executive producer. In that time, the show was always among the top-rated sitcoms and was nominated for 72 awards, winning 18. To show its remarkable vitality, in 2012, seven years after its premiere, the series won the People's Choice for Favorite Network TV Comedy.

The finale enjoyed the show's best ratings ever—nearly 13 million viewers. But not everyone was happy. Some fans felt betrayed by the finale's final twists. But that's kind of how life works, isn't it? You won't like all of its twists and turns; some will downright stink. But no matter how hard you land, what's important is that you get back up.

Here's what Kang knows for sure: The longer you stay on the ground, the longer it'll be until you get your next laugh. What she's not exactly sure of is what lies ahead; she's mulling over several opportunities. None involves waitressing.

[View in Carnegie Mellon Today digital archives](#)

IT TAKE A VILLAGE



By Nicholas Ducassi

Brenda Harger stalks the aisles of an amusement-park trade show. The CMU professor is hunting for companies that might be attractive career-placement fits for her Entertainment Technology Center (ETC) students. Suddenly, she freezes. A child's eyes stare at her from a logo for Give Kids the World Village, a place she hasn't thought about—or wanted to—in nearly a decade. Images of her daughter bounding beneath palm trees, and of oncologists measuring their words, flood her mind. She approaches the booth. "I know you guys," says Harger. "I was a 'wish' mom."

In 1990, Harger's 18-month-old daughter Hallie was diagnosed with leukemia and given a 78% chance of survival. For nearly three years, Harger and her husband watched chemotherapy treatments steal their daughter's hair, and steroids puff up her cheeks. After Harger (A'00) quit working to tend to Hallie's illness full-time, the family survived almost entirely on her husband's schoolteacher salary. Eating out became a luxury. "The word 'vacation' wasn't even in our lexicon," remembers Harger — that is, until Hallie's doctors recommended her family to the Make-A-Wish Foundation.

Just after Hallie entered the maintenance stage of her treatment, when chemo becomes less intense and less frequent, Make-A-Wish granted Hallie a visit to Disney World and several other Orlando theme parks, giving the Hargers their first vacation in nearly three years. For one all-expense-

paid week, they stayed at the Give Kids the World Village, a non-profit storybook resort that provides cost-free lodging to children with life-threatening illnesses and their families.

In the mornings, before the family visited Disney World, Universal Studios, and Sea World, four-year-old Hallie careened around the Village's attractions. Designed with its exceptional guests in mind, the resort includes a wheelchair-accessible pool and carousel, an ice-cream parlor that starts slinging sundaes at 7:30 am, and Julie's Safari Theatre, where characters like Mickey Mouse and Donald Duck visit twice a week. In the evenings, Mayor Clayton, a six-foot-tall rabbit who watches over the Village, tucks the children in at bedtime.

For Harger and her husband, it was a worry-free respite from checking for fevers and monitoring white blood cell counts. For Hallie, it was a week free from the torment of saline drips and hospital trips. Five years later, Hallie's doctors declared her cured.

At that trade show booth, Harger tells Kathy Aubruner, the Village's director of strategic alliances, all about her family's trip and her daughter's battle with cancer. Tears flow. During the conversation, an idea comes to her. "I'm at this graduate program where we make stuff using technology," says Harger. "Perhaps we might be able to help?" They exchange contact information.

Founded in 1999 by now-retired drama professor Don Marinelli and the late computer science professor Randy Pausch, ETC is the home to a unique two-year program of the College of Fine Arts and the School of Computer Science. The center, which identifies itself as the "Graduate Program for the Left and Right Brain," unites students of diverse backgrounds—from engineers and software developers to artists and philosophers—and teaches them how to create new forms of digital entertainment. Through semester-long projects, students work in teams to conceive, design, and build prototypes of video games, animated films, and virtual-reality technology for actual and fictional clients. Their training turns them into candidates for careers at places like Pixar, Microsoft, and Disney—all of which employ ETC alumni. The hallways of the center's home—several floors in a building on the Pittsburgh riverfront—are lined floor-to-ceiling with memorabilia. There are eight-foot-wide replicas of Nintendo controllers, life-size statues of Batman, and Star Wars' C-3PO.

Harger has 15 ETC students in tow the following year when she returns to the conference, this time in Orlando. She brings the students by the Village's booth, and Aubruner offers to give them a tour of the resort. By the time the students finish their visit, tears run down their faces and ideas line their notebooks. "We have to do something with them. We have to," the students tell Harger. But what?

Upon their return to Pittsburgh, the students pitch several ideas for Village projects. An ETC and Give Kids the World partnership has its merits. Marinelli and Pausch, when founding ETC, aimed for the program to be life-changing, life-enlightening, and life-enhancing, and they strived to impart the values of compassion and altruism to their students. In addition to the goodwill, a collaboration would present some terrific learning opportunities—especially in the way of client constraints. For the resort, which survives exclusively on donations, budget concerns ring loudest. As Harger puts it, the Village "is held together with duct tape and love."

Still, Harger and other faculty members have their reservations. ETC's curriculum emphasizes risk-taking and creativity. Students are taught to embrace failure as an almost expected by-product of innovation. Their completed projects are functional, but by no means intended to be finished products. Harger, knowing intimately what the students' failure would mean, is wary—to say the least. "I was terrified," she remembers. "We make prototypes. What are we doing promising completed products?"

Her fears are no match for her students' enthusiasm, and the faculty ultimately gives them the go-ahead. They green-light a computer-animated short-film project called The Big Surprise, which will follow several Village characters as they plan a surprise birthday party for Mayor Clayton (that six-foot-tall bunny).

This will be no ordinary film. In addition to writing the script

and doing the animation, the students plan to revamp the Village's under-utilized theater by outfitting it with wind, bubble, and mist machines to bring the film to life. It'll be a small-scale version of similar Disney World experiences. The scope is ambitious—especially given the semester-long timeline. But shooting for the stars is what ETC is all about. "By the end of the semester, they weren't sleeping anymore. I told them, 'Slow down. Cut something,'" remembers Harger. "No! No! No!" was their answer.

At semester's end, the students visit the Village for installation. They even organize an elaborate red-carpet premiere, with visiting parents acting as paparazzi for the Village's true stars: the children. The experience is jaw-dropping. Near the end of the film, Windy, the cloud, gives Mayor Clayton his birthday gift—a rainbow. Children's eyes light up as bubbles float around the theater and pop on their noses. "We had never seen the Village's characters animated—much less 3-D," remembers Aubruner. "To see them up on the big screen in such detail, it was perfect."

ETC was just getting started. "Once it happened, it was a match made in heaven," says Harger. With such special guests, the Village encountered some equally special problems—problems ETC students were exceptionally suited to tackle.

In the early '90s, the Village began having children write their names on two-inch, gold plastic stars. Each night, a volunteer glued the stars to the ceiling of the Village's Castle of Miracles, and the next day, children returned to see their stars—and their wishes—twinkling in the night sky. By 2005, the castle's ceiling boasted more than 50,000 stars, each representing a wish child. A fable about a star fairy who placed each star in the sky had emerged as well.

The stars took on added significance when parents of children who had passed away began returning to see their children's stars. Because they were placed on the ceiling in no particular order, finding one amid the galaxy often turned into an hours-long odyssey.

In the spring of 2006, seven ETC students undertook the massive Gold Star project. To bring the star fairy myth to life, they created a rumbling star box, into which children dropped their stars after autographing them. The children then followed the star fairy, whom the students named Stella, via an animated show on three video screens—fairy windows—as she placed their stars in the night sky.

They also created an electronic database to track each star's location. Again, the scope was extraordinary. But according to Amber Samdahl (CMU'06), currently a Disney Imagineer, who was a team member at the time, "We never lost sight of why we were doing it. When things got tough, we'd yell out,



‘Think of the kids!’ and keep going.”

The final result was stunning. But the Castle of Miracle’s ceiling had only so much room. As the Village grew and more children visited, ceiling space started to disappear. So, in 2010, the Village proposed to Harger that her students invent a way to make the stars digital. In an odd twist, Harger would have none of it. As she noted at the outset of the original star project planning: “The stars have to be physical. They’re too meaningful for the families.” Luckily, a company offered to build and donate a 30-foot addition to the Castle of Miracles, known as the Star Tower, to house tens of thousands of additional real, not digital, stars. The company then reached out to ETC: Would any students be interested in designing the star-tracking software for the new tower?

“It sounded like a fantastic project,” says then-team member Tom Corbett (CMU’11), who now works for video-game juggernaut Electronic Arts. The Village needed a very specific solution. “There’s a physical component, a location component, and a software component,” Corbett says. But the students were motivated by more than just the challenge. “When you make a video game, you don’t necessarily touch other people,” he adds. “In this case, we could create something that had a lot of impact.”

By May 2011, Corbett and seven other students had designed, coded, and installed remote-controlled cameras embedded in the tower walls, an updated star-tracking database, and a light and sound display that would make Disney jealous. The team

even created an interactive application for the iPad that used the ability of the tablet’s internal accelerometer and gyroscopes to respond to movement to make children feel like they were looking right into the star fairy’s world.

But shooting for the stars creates its own problems. Because few—if any—of the park’s army of volunteers have experience with software coding or entertainment technology, maintenance of the complex attractions designed by ETC students is difficult. Luckily, many graduates go on to design attractions at Orlando’s theme parks, so they’re sometimes able to return to make repairs. To assist them, Harger and several alumni are raising funds to create a paid summer internship position for an ETC student, as well as cover travel costs for current students to make periodic maintenance visits.

Over the years, ETC has delivered several other projects, including a giant interactive pillow-tree and a reservation kiosk for Mayor Clayton’s bedtime tuck-ins. And an ETC team just debuted a new short film, *Stardust*, which will run before the poolside “dive-in” movie. The stunning 3-D animated film tells the story of how Mayor Clayton and his wife, Miss Merry, originally met.

The partnership has even inspired some alumni to found their own ventures, including an interactive technology firm, Electric Owl, launched by 2007 grads Patrick Mittereder and Brad Patton. Their company’s first product, a kiosk developed to help alleviate children’s fears and anxieties when visiting the doctor, is currently in hospitals on three continents.

Give Kids the World, which just celebrated its 27th anniversary and hosted its 120,000th child, has big plans for future additions and attractions, so the partnership isn’t going anywhere. Every addition creates ever more opportunities for ETC students to donate their time and talents. And before too long, an ETC team will have to dream up a new star-tracking solution, too.

But for Harger, the Village is the one doing the giving: “From my perspective, it’s a gift to our students that the Village is willing to work with us in this capacity.” She wouldn’t wish her daughter’s ordeal on anyone. But as more stars fill the tower’s sky, and as her students help bring more smiles to the faces of those who need them most, she can’t help but see the beauty in it all. Sometimes the darkest clouds have the brightest silver linings.



TELEVISION PERSONALITY

*For FOX SVP Jessica Fang,
The Only Constant is Change*

By Nicholas Ducassi

Shuffling through the door of a Japanese restaurant in Los Angeles is a family of six—Mom and Dad, who happen to be power players in the entertainment industry, their two sons ages eight and six, and their 2-year-old twin girls. To say that the parents have their hands full is an understatement, and that may explain why the family’s entrance turns the heads of some restaurant patrons. The glances range from sympathetic to envious to ones with an unspoken message: This isn’t daycare; don’t let your children’s antics ruin our dinner!

Indeed, for Jessica Fang and Dean Okazaki who married in 2003—dining out with their children might be considered a ticking time bomb of anarchy. Oblivious to the stares, they adroitly strap the twins into highchairs and get the boys situated. Then, in what seems like a choreographed sequence of events, they place their orders, feed the twins, watch their boys eat, and somehow finish their own meals, all while keeping the table’s decibel level under control.

One of their secrets? iPads for the twins.

If you’re a parent of youngsters, you already know that tablet computers and smartphones have revolutionized downtime in parenting. The ability to watch anything on the go is incredibly effective crowd control for anyone who hasn’t yet been visited by the tooth fairy. Those long waits at the

pediatrician’s office, traffic jams, and the time before a meal is served at a restaurant are no longer a parent’s worst nightmare. And now, with speedy Wi-Fi nearly everywhere, you don’t need to download favorite television shows before you usher the kids out the door.

The unbridled viewing breakthrough is appropriately called TV Everywhere, and it’s just one of several changes to the television industry Jessica Fang has kept up with in her more than decade-long career at Fox Networks. Recently promoted to senior vice president of distribution for national accounts, she’s in charge of negotiating distribution agreements for Fox’s programming services across all media platforms—services that reach more than 700 million subscribing television homes, according to Fox.

Negotiations used to be relatively straightforward. No more. Gone are the days when the television was the only place you could watch television. Nowadays, the Internet has taken TV out of the home, through an onslaught of technological offerings with funky names such as Roku, Xfinity, and Hopper.

Adapting to change has become second nature to Fang. After living on three continents by the time she was 18, becoming the mother of four, and keeping up with the innovations in television distribution, she’s mastered—by necessity—the ability

to adapt at home and at work.

Raised in Hong Kong by American expatriates, she has always been smart beyond her years. At just nine months old, she earned the nickname Little Computer Brain after she learned how to work the family’s complicated stereo player—a machine that managed to confound some of the adults.

Fluent in both Cantonese and English by early grade school, she became the go-to tutor when her Hong Kong classmates needed help pronouncing difficult English words. But her smarts went beyond just acquiring information—she’s been able to read situations and adapt to them, too.

Her mother remembers eavesdropping on her daughter once when picking her up from elementary school. Fang was talking with her friends in English. Although she could speak the language with a perfect American accent, she spoke to her friends that afternoon in a thick Hong Kong accent. When her mother asked why, she replied: “Because that’s the way the teacher speaks English. If they want to do well in class, they have to learn to pronounce words the way the teacher says them.”

Like many of her American counterparts, Fang loved watching TV growing up. Every night, she plopped in front of the family’s television to catch her favorite American shows—Dynasty, Dallas, and Diff’rent Strokes. They were her favorites by default. In the 1980s, before robust international distribution or satellite television, Hong Kong only received four channels—two in English and two in Chinese. On top of that, American shows aired two to three years after their original airdates in the United States.

When Fang was halfway through middle school, her father, who worked in international business, learned he was being transferred to the United Arab Emirates. He insisted that Fang enroll in an English boarding school. By eighth grade, she was 6,000 miles from her Hong Kong friends—in Brighton, a small coastal town in England south of London. There, she honed her math skills and became fascinated with computers and robotics.

For as long as she can remember, she’d dreamt of college in the United States—a byproduct of both her parents earning degrees there. But pursuing a college education in the States wouldn’t come without sacrifices. Often, while her friends were having fun, she was studying for the SAT, alone in her dorm room, because applications to European universities don’t call for the test. Her diligence paid off; she scored well enough to gain acceptance to Carnegie Mellon in 1992, where she planned to study artificial intelligence and robotics.

Once she was on campus, however, a degree in robotics seemed more daunting than it did across the pond. “I thought

I was a computer genius back in high school, but, I swear, my classmates must have come out of the womb knowing how to program in C++,” Fang recalls. She tried her hand at a few different majors before settling on psychology and industrial management.

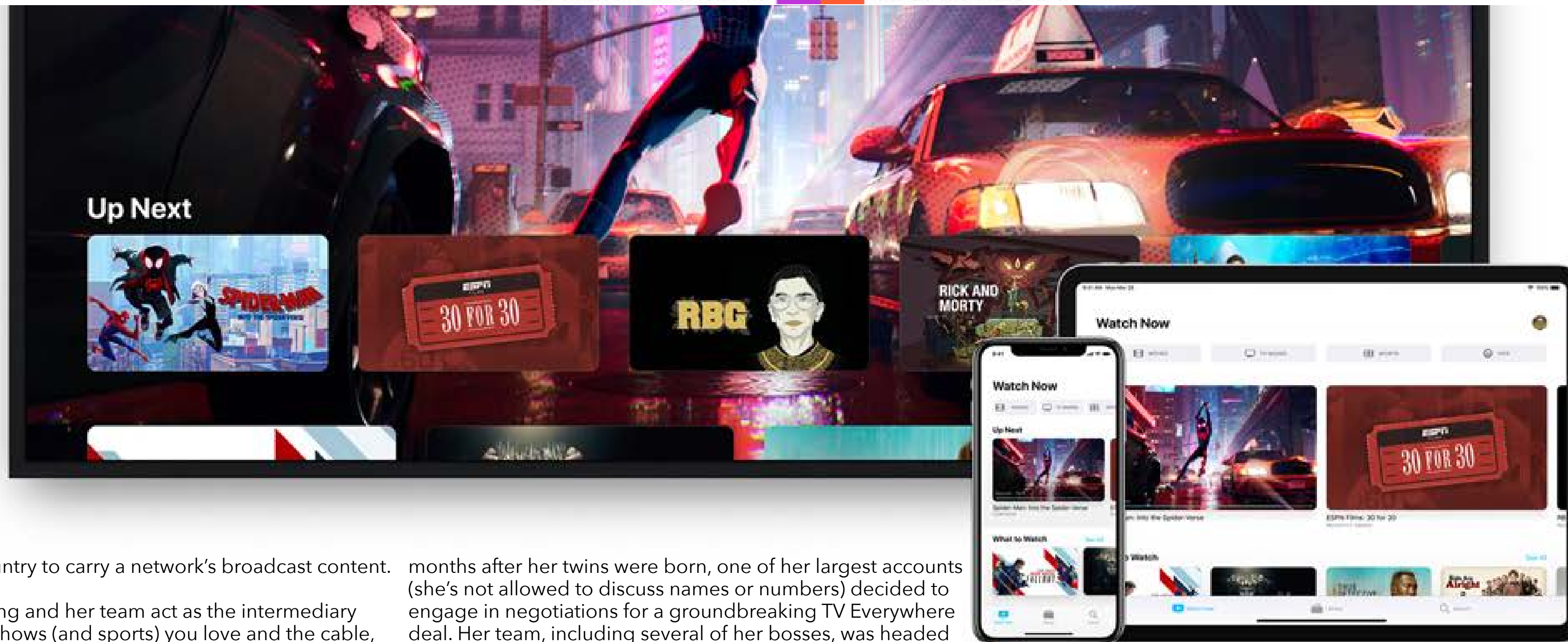
During her college years, she stretched her class load to the limit and also joined the Asian Student Association (eventually becoming president). She took a job as a barista to help pay her room and board. “She always had a million and one things going on and somehow always pulled it off,” says friend and former classmate James Choi (DC’95). But even with a full plate, adds the financial executive, “she was never one to miss a good party.”

After earning her degree from Dietrich College in 1996, she moved to Los Angeles and decided to pursue an MBA at Pepperdine University. She waited tables at The Cheesecake Factory to help foot the bill and, when she graduated, spent a few months putting together a business plan to open a fast-casual restaurant with a friend. “Think Chipotle, but with a Chinese slant,” she says. The plans fell apart when they couldn’t find the right location. “It’s Los Angeles,” she says. “Location is everything.”

With entrepreneurial dreams on hold, she landed a temp job in 1999 working in Playboy’s home entertainment division. When they discovered Fang had a knack for numbers, she was given additional responsibility in financial planning. While at Playboy, she met her future husband, Dean Okazaki, who worked in Playboy’s business and legal affairs in the home entertainment division. Both soon left for other positions but wound up at Fox—Okazaki joined 20th Century Fox’s legal affairs team in the home entertainment division, and in 2002, Fang became an account manager in distribution at Fox Networks.

Fox Networks comprises much more than just the Fox broadcast channel you might have in mind; it’s the home of shows such as Glee, The Simpsons, and Cosmos. The vast constellation of programming encompasses more than 40 different cable channels, including MundoFox (Fox’s Spanish-language answer to channels Univision and Telemundo), FX (home to hits like Louie and Justified), the National Geographic Channel (Wicked Tuna), and more than two-dozen national and regional sports channels, including Fox Sports 1, Fox Sports West and the Big Ten Network.

All of that programming needs eyeballs, and that’s where Fang and her distribution team come in. It’s complicated, but in essence, networks make money in two ways: advertising and distribution fees, which is what networks charge cable and satellite companies to carry their channels. Broadcast networks also make money on affiliate programming fees, which the networks charge to local broadcast stations



across the country to carry a network's broadcast content.

Essentially, Fang and her team act as the intermediary between the shows (and sports) you love and the cable, telephone, and satellite companies, by negotiating with those distribution companies.

The negotiation is a careful dance for all parties: distributors need the network's channels to sell to their subscribers; networks need distributors to get their content to their audiences so that they can sell advertising. Distributors and networks need each other. And that's what can make negotiations sensitive

It's actually common for negotiations to drag on well past midnight. For executives who are parents, that becomes a life-balance struggle. In Fang's case, she is known around the office to take the late nights and sleep deprivation in stride because she's used to it. "That's just what life is like with little kids," she says with a smile. "They wake you up in the middle of the night."

Even with the heavy workload both at the office and at home, she finds the time to bake cookies and snacks for the bake sales at her boys' school. She also sits in on their Mandarin classes so that she can go through their lessons with them again back at home.

It's inevitable that the responsibilities of being a mother and being an executive at Fox sometimes conflict. Just

months after her twins were born, one of her largest accounts (she's not allowed to discuss names or numbers) decided to engage in negotiations for a groundbreaking TV Everywhere deal. Her team, including several of her bosses, was headed to the client's headquarters to hammer out the details.

The problem? Fang was still on maternity leave. With twin girls nursing—and not sleeping through the night yet—and negotiations on the other side of the country that were likely to take "hours a day and days on end," everyone expected Fang to sit this one out. Everyone, that is, except Fang. The deal was a seminal one for Fox Networks, one in which both sides were "headed into uncharted territory," she says. Not only that, but it was her account. She had spent years nurturing relationships with the people who would be sitting across the negotiating table. She was confident her team would be able to pull it off, but she couldn't get over the idea of being so far away when so much was on the line. She discussed it with her husband, made sure their mothers would be able to pick up the slack, packed her bags, and headed east.

Once she was situated, she says, it was difficult not to think of her daughters, even as she shuttled between the hotel to the conference rooms of her clients and her team. But she did what she had to do. "She dove in and went to extraordinary lengths to help close the deal," remembers her boss, Michael Biard, president of distribution at Fox Networks. "We were holed up in a conference room for a week straight. But that's just who she is." When a colleague talked about how hard it was to stay sharp, even when negotiations went well into the

night, Fang couldn't help but tease, "Try getting four kids to bed every night, and it will come naturally to you."

Biard, for one, is impressed: "Jessica really has forged a trail in balancing an extraordinarily demanding job with an even more demanding personal life. Her dedication to her work is exemplary, but it doesn't come at the expense of her family. She's become an inspiration to a lot of the women, and men, in our group."

It's not just Biard who is impressed. Fang was named to the 2014 Class of "40 Under 40" by Multichannel News, a trade magazine and website for cable television professionals. The 40 executives under the age of 40 were selected for "making their mark in leadership roles." And another leading news sources for the cable industry, CableFAX, has named Fang one of the industry's "Most Influential Minorities" for the third year in a row.

LIGHTS CAMERA DATA

By Nicholas Ducassi

Imagine it's the 1950s, and you're a kitchen knife salesman. Every morning, after you finish your two eggs with toast, you slip into your ironed slacks, grab your briefcase of knife samples, and hit the pavement.

You work in the daytime because that's when your customers are most likely to be home. On average, for every 100 doors you knock on, 20 open. Of those, six customers will purchase your knife set. It's a bit scattershot, but considering what little information you have—simply that daytime gives you the best shot of face time with customers—6% is a terrific return.

This is how, for most of the past century, network television shows came into being. For every 100 scripts a network purchased the rights to produce, an average of 20 were turned into pilots, and six were ultimately broadcast, according to Variety, the weekly entertainment trade magazine.

Just like the knife salesman, the networks "have almost no information about their audience as individuals, who they are or why they watch," says Michael Smith, a Carnegie Mellon University professor in its Heinz College's Master of Entertainment Industry Management (MEIM) and Master of Information Systems Management (MISM) programs. Although the networks conduct focus groups and receive basic demographic information and viewership numbers from Nielsen ratings, they've never had anywhere near the specificity of information collected by the digital media companies they're now competing with, says Smith, who was selected to be the Exclusive Data Keynote Speaker at this year's Sundance Film Festival's

Artist Institute Workshop, where industry experts debate the latest technology, tools, and tactics in social funding, digital distribution, guerilla marketing, and independent theatrical distribution.

And Smith was selected for good reason. In 2012, he and one of his colleagues, MISM professor Rahul Telang, founded a research center within Heinz College called IDEA—the Initiative for Digital Entertainment Analytics—to conduct research on digital content distribution in partnership with some of the biggest players in entertainment, including major movie studios, record labels, publishing houses, and relative newcomers like Amazon and Google.

EVERY TIME YOU STREAM YOUR FAVORITE SHOW, YOU'RE SENDING MOUNTAINS OF DATA TO THE COMPANIES PROVIDING IT TO YOU—NOT JUST WHAT YOU WATCH, BUT WHEN YOU WATCH, HOW LONG YOU WATCH, AND WHAT DEVICE YOU'RE WATCHING IT ON.

Together, they've distilled over a decade of research, both their own and the work of others—into a forthcoming book, *Streaming, Sharing, Stealing: Big Data and the Future of Entertainment* (MIT Press, Fall 2016). The book provides a nuts-and-bolts look at how the streaming companies have risen to prominence, as well as a "perfect storm" of threats currently facing the traditional broadcasters—including piracy, a reluctance to embrace data-driven decision making, and consumers' movement toward user-generated content.

Director of the MEIM program Dan Green commends the research and acknowledges the growing need for companies in the entertainment industry to embrace new distribution models. "The environment surrounding the industry today is less about distributing through antiquated channels and more about providing individual experiences to consumers at the moment they desire and on devices that are convenient to them," he says.

If the older network model is a knife salesman playing a numbers game, what are the streaming companies? Simply put: better knife salesmen—not because they're selling better knives necessarily, but because they have more information than their rivals. Imagine if you gave that same knife salesman a lead that contained the names and addresses of the homeowners who needed a new set of knives, as well as information on what time they'd be home and which specific knives they wanted. That knife salesman would close deal after deal and have more satisfied customers.

Such a lead—customer information—is what digital content distribution companies, the likes of Amazon, Hulu, Netflix, and YouTube, are leveraging over their traditional broadcasting elders such as Disney-ABC and NBCUniversal.

Really, write Smith and Telang, the comparison between traditional media companies and their digital rivals "is a clash between human expertise and data." Every time you stream your favorite show, you're sending mountains of data to the companies providing it to you—not just what you watch, but when you watch, how long you watch, and what device you're watching it on.

Those companies then harness that information using sophisticated analytics to create even more of what you want to watch—and to get you to watch it. Digital content distribution companies, says Telang, "have more information about what's successful with their audience than their rivals—and they have that information at a really personal level."

According to Smith and Telang, Netflix's ability to use that data is part of what's enabled the company to flourish. Earlier this month, Netflix reported to shareholders that at the end of 2015 the company had more than 74 million members worldwide and is estimated to grow by more than 6 million members in the first quarter of 2016, in part because of its expansion "virtually everywhere but China." As for earnings, in the 2015 fourth quarter alone, the company reported \$1.823 billion in revenue and \$43 million in profit.

Add the fact that Netflix led the way for "TV Networks" in nominations for the 2016 Golden Globes—Netflix 8; HBO 7; Starz 6; Amazon Video 5; FX 5; ABC 4; FOX 4; PBS 4; Showtime 3; USA Network 3; AMC 2; The CW 2; BBC America 1; CBS 1; Hulu 1—and it's no wonder Netflix proclaims on its website: "Internet TV is replacing linear TV."

Amazon benefits from even more information—purchase histories and searches on other non-video areas of its site. That vast metadata has helped its production wing, Amazon Studios—which began producing television shows in 2013—create "Mozart in the Jungle," which just won Best Television Series-Comedy or Musical at the 2016 Golden Globes awards (beating shows from HBO, Hulu, and Netflix). Amazon's CEO, Jeff Bezos, recently declared publicly that he wants an Amazon Studios film to one day win an Oscar—and his company's ability to harness an incredible wealth of data is why many in the entertainment industry think it's possible.

Because the digital content streaming companies know their customers more intimately than their more traditional rivals do, they're better able to do two important things:

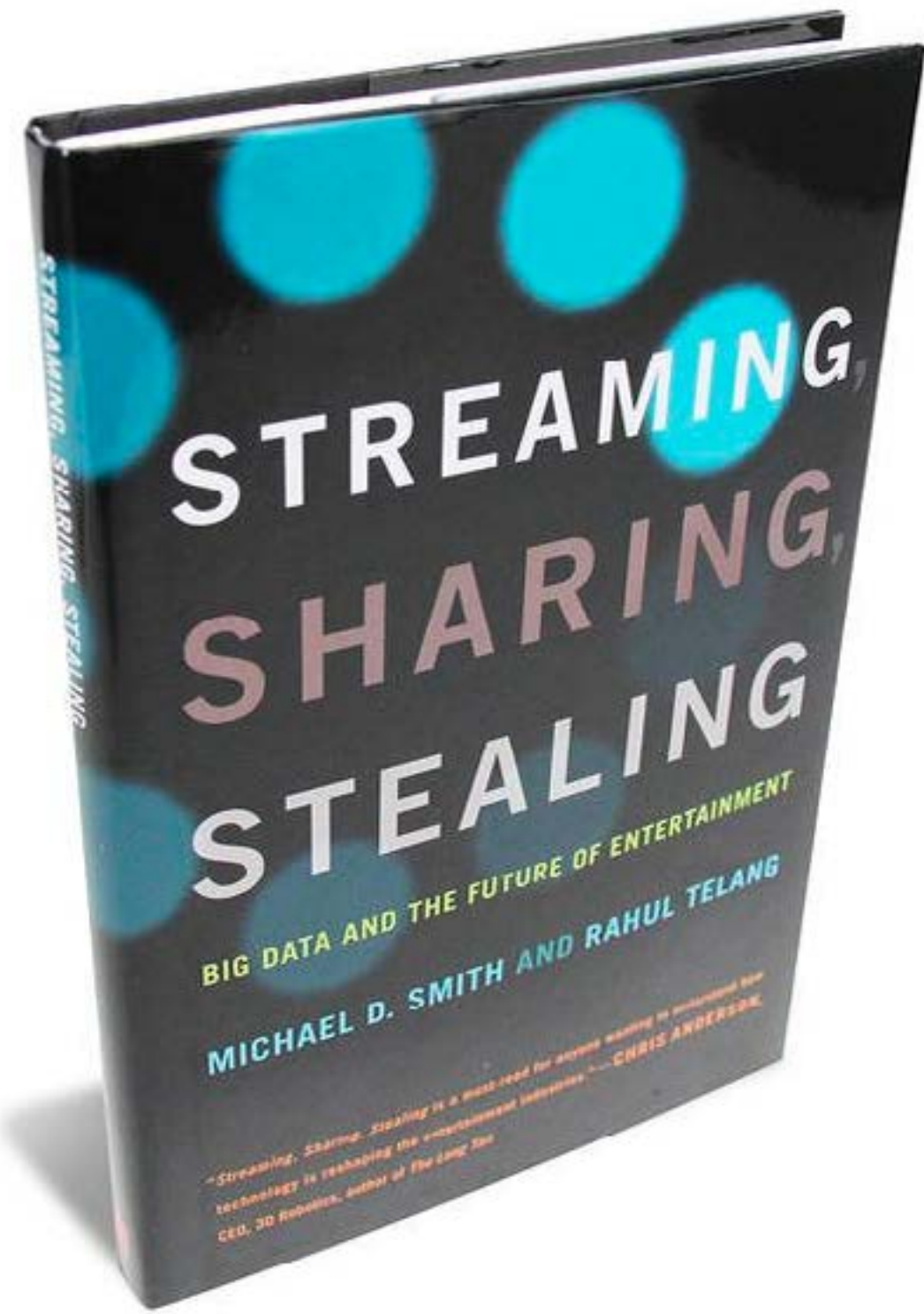
- Create the right content
- Get you to watch it

One of the clearest examples is highlighted in the introduction of Smith and Telang's book—how Netflix created its hit political thriller television show, "House of Cards."

In early 2011, a pitch for "House of Cards" was making the rounds of television networks. The proposed series, essentially an Americanized version of a BBC show, had attracted award-winning director David Fincher ("The Curious Case of Benjamin Button"), Academy Award-winning actor Kevin Spacey ("The Usual Suspects"), and Academy Award-nominated writer Beau Willimon ("The Ides of March"). Despite the A-list talent, networks were hesitant to bite because a political series hadn't succeeded in network television since "The West Wing" ended in 2006.

Netflix, however, was welcoming, write Smith and Telang: "Ted Sarandos, Netflix's Chief Content Officer ... came to the meeting primarily interested in data—his data—on the individual viewing habits of Netflix's millions of subscribers." The data showed that a sizable portion of Netflix's customers were fans of David Fincher and Kevin Spacey and that many "had rented DVD copies of the original BBC series."

With that knowledge, Netflix gave "House of Cards" the green light to produce two full seasons, at a cost of \$100 million. The show became a hit and the first online-only web television series to receive major Emmy nominations. Now, through three seasons (2013-2015), it has received a total of 33 nominations and six awards in the "Drama Series" category, including the prestigious Outstanding Drama Series, Outstanding Director, Outstanding Lead Actor, and Outstanding Lead Actress.



LIKE A BEST FRIEND WHO KNOWS YOUR TASTES IN AND OUT, STREAMING COMPANIES ARE USING YOUR DATA INFORMATION TO PRODUCE WHAT YOU WANT TO WATCH AND THEN USING THAT SAME DIRECT ACCESS TO STRATEGICALLY PROMOTE THE CONTENT.

Netflix has since followed that up with more hit shows such as “Orange Is the New Black” and the documentary “Making a Murderer,” which has recently dominated social media chatter. Basking in such success, the company recently announced plans to nearly double its output of original content in the coming year: 31 titles in contrast to 16 in 2015.

But Smith and Telang say that Netflix’s “true genius” isn’t just in using data to decide which shows to create; the streaming giant relies on research findings to tailor marketing to specific fans. For example, there were nine different “House of Cards” trailers, each emphasizing distinct elements—so Fincher fans saw a different trailer than Spacey fans.

Smith and Telang believe that in the digital world we live in—where every viewer’s attention is pulled in multiple directions by, among others, television shows, movies, video games, and YouTube videos—the ability to market efficiently is data’s true potency. Like a best friend who knows your tastes in and out, streaming companies are using your data information to produce what you want to watch and then using that same direct access to strategically promote the content.

So, why don’t traditional studios employ deep data to make decisions? According to Smith and Telang, they don’t have access to the kind of large-scale data that their digital competition does.

Then, why don’t studios just create their own apps to collect that data? Well, they’re starting to—all of the television networks and many cable channels have launched streaming apps, like WATCH ABC, FOX NOW, and CBS All Access. Premium cable channels like HBO and Showtime—which until 2015 were only available through traditional cable subscriptions—have launched their own direct-subscription “over-the-top” models that allow viewers to stream their content on most devices without a cable subscription. Great, problem solved.

Not so fast, say Smith and Telang. Consumers have shown that they prefer simplicity and want to get as much content from as few outlets as possible. They might balk at learning “how to use multiple websites” and be “unwilling to maintain multiple logins.”

Moreover, the new kids’ information is still more powerful because they compile information from their viewers across all of the content in their libraries—not just a particular network or studio. And they don’t share it. “Amazon, Google, and Netflix ... provide no data on customers to their industry partners,” the researchers write.

Why not? Because doing so would help the networks and studios “figure out how much that show’s worth,” says Keith Eich (E’02), a fellow professor at MEIM and former director of digital distribution operations at NBCUniversal. The digital companies pay big money to license the networks’ shows for their vast libraries, he explains; sharing that information would handicap them in negotiations. So, then, why not team up to create one digital platform that streams multiple networks’ shows? They have—it’s called Hulu, and it’s owned by traditional television titans Disney-ABC, FOX, and NBCUniversal. Partially ad-supported and partially subscription-based, the platform streams television episodes from ABC, CW, FOX, and NBC the day after they air and past seasons of shows, as well as movies.

The issue, write Smith and Telang, is that Hulu’s success comes at the

expense of the shows’ linear presentation—the more people who watch a show via Hulu, the fewer who watch it via their televisions—which cuts into ratings, which is the basis of how much networks charge for ads.

To solve these problems, why don’t the networks fully embrace data-driven decision making? Smith and Telang say that very question was addressed by Richard Hilleman, the chief creative officer for Electronic Arts, during a speaking engagement on the CMU campus. He told students that older companies have always made their decisions “based on someone’s ‘gut feel’ about what will sell in the market,” and those with the best instincts tended to rise to the top of their companies. In contrast, their competition, “Google, Amazon, and Apple ... make quantitative decisions based on what their data tells them.”

Still, though, Smith and Telang say that the end is not necessarily nigh for the networks. “We are optimistic about the future of the entertainment industries,” they write—if the traditional media companies “harness the power of detailed customer-level data, and embrace a culture of data-driven decision making.”

But there’s something else on the horizon, something we haven’t touched on yet—the viewing habits of one-fourth of the entire population of the United States—millennials. According to Forbes, the 80 million millennials in America represent “about \$200 billion in buying power.” As for their viewing habits, Smith and Telang offer a statistic that might strike fear in television network executives: “TV viewing among 18- to 24-year-olds fell by 32% from 2010 to 2015.” Where are they going? YouTube for one, which, the authors write, “reached more 18- to 34-year-olds” in 2014 “than any cable network.”

That may explain the career path of Andy Forssell, the former CEO of Hulu, who became the COO at Fullscreen this past November—a company that describes itself as “the first media company for the connected generation.”

Fullscreen is a “multi-channel network.” Essentially, it acquires different YouTube channels and connects them with brands and sponsors. “Companies can tell us the audience they want to influence,” says Forssell, who earned a BS in electrical engineering from CMU in 1987, “and we can get them to the right influencers. The companies don’t have to worry about who the influencers are—we have that data.”

Today, Fullscreen reports its 600 million subscribers generate more than 5 billion video views across Fullscreen’s global network each month.

Looking ahead, Forssell thinks that the future of online video entertainment is still very much up in the air. He predicts that the big streaming companies like Amazon, Hulu, and Netflix “will become bigger versions of themselves,” but he doesn’t think the studio system or traditional networks are going to crumble. “There’s a lot of money in that system for a long time to come.” But, he adds, “there are real cracks now.”

Smith, for one, sympathizes with those running the legacy studios and networks, who are “being asked to make billion-dollar decisions without all of the data.” However it plays out, though, he says the “empha-

GOING SUNDANCING

Carnegie Mellon is represented on both sides of the camera at the 2017 Sundance Film Festival.

By Nicholas Ducassi

The lights at this year’s Sundance Film Festival will be especially bright for Carnegie Mellon University.

Of the 16 feature films competing in the U.S. Dramatic category – selected from over 2,000 submissions – four of them star young School of Drama alumni and a fifth features a CMU faculty member as an executive producer.

CMU’s strong showing at this year’s festival is “a testament to the high caliber of their training,” said Peter Cooke, head of the School of Drama.

Nearly 50,000 industry members and cinephiles are expected to descend upon the snow-capped mountains of Utah Jan. 19-29 to have an opportunity to watch the world premieres with CMU ties.



LANDLINE

Two sisters come of age in “Landline” when they discover their father’s affair – and it turns out he is not the only cheater in the family. Set in the 1990s in New York City, the film is the recipient of early Sundance buzz from the likes of industry trade outlet Indiewire. “Landline” stars alumna Abby Quinn, who studied at CMU from 2014 to 2015.



A still from *Roxanne Roxanne*

ROXANNE ROXANNE

Chante Adams, a 2016 CMU alumna, stars as young rap phenom Roxanne Shante in “Roxanne Roxanne,” based on the true story of Lolita “Roxanne Shante” Gooden. Cast as the lead character less than two months after graduating, Adams was given just two weeks to prepare for her first-ever professional film role, one that required her to not only rap, but do so while wearing prosthetic braces.

Adams said she “just hopped out of the classroom” when she learned she would be acting opposite the highly acclaimed Mahershala Ali – a Golden Globe nominee and likely Oscar contender for “Moonlight” – who plays the father of Roxanne’s child. But the high-profile role and condensed preparation time was not a problem for her.

“Because of the training I had at CMU, I knew exactly how I needed to prepare,” Adams said.

Serendipitously, Adams saw a friendly face on set. Mitchell Edwards, a 2015 alumnus who appears in the 2017 Sundance feature film “Burning Sands,” was cast as Roxanne’s childhood friend and shares several scenes with Adams.



Labeled one of “Four Films to Know” at Sundance this year by The New York Times, “The Yellow Birds” follows two young soldiers deployed to fight in the Iraq War. Carter Redwood, a 2014 CMU graduate, plays soldier Lenny Crockett.

[View in Carnegie Mellon Today digital archives](#)

Since graduating, Redwood has worked steadily in television and film. His credits include “The Transfiguration,” which debuted at the prestigious Cannes International Film Festival in 2016.

But his work in “The Yellow Birds” was unlike anything he ever experienced. A two-month film shoot in the Moroccan desert began with a week-long boot camp in which Redwood received military training from Dale Dye, a military veteran turned movie technical adviser whose credits include “Platoon,” “Born on the Fourth of July” and “Saving Private Ryan.”

“From firing blanks, to performing tactical drills at 3 a.m. in the middle of the desert, to jumping out of Humvees, it required everything I had to give,” Redwood recalled. “But the 12-hour days of classes and rehearsals at Carnegie Mellon translated perfectly to the 12-hour days of training and filming. I had to be on my A-game at all times...and thankfully, my acting training instilled in me the values of focus, preparation and resilience, which were vital for me on set.”



A still from *Burning Sands*

BURNING SANDS

“Burning Sands,” which stars 2015 CMU alumnus Mitchell Edwards, has already secured global distribution from Netflix.

“Deep into a fraternity’s Hell Week,” reads the film’s synopsis, “a favored pledge is torn between honoring a code of silence or standing up against the intensifying violence of underground hazing.”

Edwards had little downtime between shooting “Burning Sands” and “Roxanne Roxanne,” and he said CMU’s training “allowed me to develop my characters quickly and perform with confidence.”



A still from *Crown Heights*

CROWN HEIGHTS

Jonathan Baker, an adjunct professor in CMU’s Master of Entertainment Industry Management (MEIM) program, served as an executive producer on “Crown Heights.” The film centers on the true story of Colin Warner, who was wrongfully convicted of murder, and his best friend who devotes his life to proving his innocence.

Cheering on Baker’s film in Park City, Utah, will be second-year MEIM students, who attend special seminars and panels at the Sundance Film Festival each year to learn about distribution and film acquisition. The MEIM program is a joint offering of CMU’s Heinz College and College of Fine Arts.

CMU is no stranger to the nation’s premier independent film festival. Last year, Netflix purchased the streaming rights to “Talullah,” written and directed by 1999 School of Drama alumna Sian Heder.

Throughout 2017, each of the above films are expected to appear in cinemas nationwide and/or be available through online streaming.

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Story Update:

- “Crown Heights” won the festival’s Audience Award. In addition, Variety reports that Amazon Studios picked up the rights to the film for more than \$2 million!

- Chante Adams won the festival’s Special Jury Award for Breakthrough Performance!

- “Yellow Birds” won the festival’s Special Jury Award for Cinematography!

- Roxanne Benjamin (MEIM 2009) directed “Don’t Fall” which delivers some beautifully-choreographed action as one of four short films in the “XX” horror anthology.

LOVE WINS

By Nicholas Ducassi

Through his demographic data analysis, Gary Gates played an instrumental role in the Supreme Court’s landmark decision that has legalized same-sex marriage. But the Carnegie Mellon alumnus says much more work needs to be done for LGBTQ equality.

Among the airline passengers on a flight from Washington, D.C., to Toronto, Canada, were Gary Gates and his fiancé. Accompanying them were a few of their closest friends who were tagging along to witness the couple exchange wedding vows. Afterwards, when the newlyweds embarked on the trip home, something happened the moment they crossed the border. Their 2004 marriage vanished, at least in the eyes of the U.S. government, where at the time no state acknowledged a marriage between spouses of the same sex.

In 2015, that has since changed, in part, because of Gates. The U.S. Supreme Court ruled that Americans have the right to marry whom-ever they wished. Justice Anthony Kennedy, author of the major-ity opinion, cited Gates, who has become a leading researcher in LGBTQ demographics after earning his PhD in Public Policy and Management at Carnegie Mellon University.

Like the civil rights and women’s suffrage movements, the fight for greater LGBTQ rights wasn’t led by Gates or any particular individual. In fact, decades from now, when students riffle through their history textbooks, they may not read much about Gates or the research he began at CMU. But there is little doubt that his work analyzing LGBTQ demographics data has played an instrumental role in securing LGBTQ rights.

Community Unrest

Most historians point to one night as the birth of the gay rights movement. In the early morning hours of June 28, 1969, police raided New York City’s Stonewall Inn. Raids on bars and establishments frequented by the LGBTQ community were common then. On this

night, as officers cleared out the bar, nearly 200 people spilled onto the street. Inside, officers allegedly made several men dressed as women prove their sex. When they couldn’t, they were arrested (like several other laws on the books at the time that were aimed at LGBTQ individuals, cross-dressing was illegal).

The crowd outside grew restless, and as people were being arrested, skirmishes broke out between police and the bystanders, which led to unrest between gays and police that lasted for nearly a week. It marked the first time that people, en masse, weren’t afraid to reveal in public that they weren’t heterosexual. More importantly, Stonewall prompted the gay community to begin to organize. Within a few years, gay rights organizations and gay newspapers became well established.

It wasn’t until the AIDS crisis in the ’80s, though, that homosexuality truly became front-page news. “I tend to see the AIDS crisis as a tremendous accelerant,” says Tim Haggerty, Director of the Humanities Scholars Program, whose research examines the changing roles of masculinity and male identity in the 19th and 20th centuries.

The disease robbed parents of their sons, businesses of their employees, and the public of some of its stars, men like Freddie Mercury, lead singer for the rock band Queen, and Rock Hudson, one of Hollywood’s most popular actors. “AIDS, within six months, could turn a healthy, vibrant man into what looked like an Auschwitz victim,” says Haggerty. By 1989, it was estimated that AIDS claimed the lives of more than 100,000 Americans.

“The terror of the disease forced people to confront the humans who

were suffering. You could readily imagine these people as your brother, or partner, or son,” says Haggerty. The crisis prompted the gay community to organize, and organizations were founded to fundraise and provide medical services. In the 1990s, once the crisis became more of a chronic disease than a death sentence, those organizations began to turn their political firepower—and their money—toward broadening LGBTQ rights. “All of that momentum was still there,” says Haggerty. “I think a lot of the thinking was—we can provide health services—but maybe we can also redirect that momentum.”

But was the LGBTQ community itself large enough to get the attention of national policy makers? Were there gay populations outside of typical gay-friendly mainstays like New York City and San Francisco? What about their socio-economic status? Education? No one really knew.

Groundbreaking Data

For most of America’s existence, same-sex relationships and activities ranged from taboo to illegal, and divulging one’s sexual orientation meant risking one’s life—sometimes literally. The little data that did exist largely reflected a subset of the whole community—those who could either afford the risk of coming out to researchers, or those with nothing to lose.

“LGBTQ PEOPLE NOW KNOW THAT THERE ARE OTHERS OUT THERE JUST LIKE THEM.”

-Gary Gates

That is, until Lowell Taylor, H. John Heinz III professor of economics at Carnegie Mellon, along with colleagues Dan Black, Seth Sanders, and then-PhD candidate Gary Gates, noticed a curious change in the 1990 census. For the first time, respondents could check a box to describe a relationship to an individual living with them: “unmarried partner.”

Although the census creators almost certainly didn’t anticipate it, says Gates, researchers like him were given a wealth of information about same-sex couples. Because of this new option, if the head of a household reported living with an “unmarried partner” of the same sex—Taylor and Gates could reasonably assume that they were looking at data from a same-sex, unmarried couple.

“This was groundbreaking,” says Gates. “We could look at same-sex couples across sex, age, education, income level, and more.” They could also determine where those couples were living, how many were raising children, and whether they were veterans. “It was massively larger than any other data set previously available. ... We were able to go to town,” says Taylor.

In 2000, via the journal *Demography*, they published their findings: “Demographics of the Gay and Lesbian Population in the United States.”

By the time the 2000 census data were released, Gates—who had earned his PhD from CMU that year—was conducting policy research at the Urban Institute, a liberal think tank in Washington, D.C. Every week, the census would release data from a new batch of states, and soon after, Gates and his team would put out a press release of how many same-sex couples were represented in the data. “People were fasci-

nated by the numbers, because there just wasn’t any other data out there. Major media was clamoring for it.”

Gates capitalized on that fascination and published a report estimating that there were about 65,000 gay men and women on active duty, in the National Guard, or in the reserves, as well as more than 1 million gay veterans living in the United States. The 65,000 number was cited by news organizations all over the country. “You would never know that number, 65,000, came from me,” remembers Gates. “It was bizarre to watch—it just became this number that people just started saying over and over and over again—and people lost track of where it came from.”

Proponents of repealing “Don’t Ask Don’t Tell”—the policy passed during the Clinton administration that allowed homosexuals to serve in the U.S. military as long as they kept their sexual orientation a secret—now had numerical weapons at their disposal. Not only were gays and lesbians currently serving in the military—they had always been there.

“All of these gay service people—with medals and accomplishments—were being kicked out because of whom they loved. And for every one of them, there were 64,999 more.” In September 2011, “Don’t Ask Don’t Tell” was officially repealed. But Gates’ biggest contribution to the gay rights movement was just over the horizon.

In 2012, a Michigan lesbian couple raising three adopted children—one an adopted son and the other two adopted daughters—filed a lawsuit in Federal District court challenging the state’s ban of same-sex couples jointly adopting children. The lawsuit ended up challenging the state’s ban on same-sex couples getting married since state law limited joint adoptions to married couples. The couple testified that because they couldn’t adopt each other’s children, they were unfairly disadvantaged. If tragedy befell one of the mothers, her children could essentially be parentless—the other mother could be a legal stranger in the eyes of the law.

Gates had already been submitting amicus briefs to several of the largest same-sex marriage cases waged in the United States since 2005. In the Michigan case, which was one of only two cases that included a trial, he served as an expert witness and testified that nearly 14,000 other same-sex couples called Michigan home, many of whom faced similar predicaments. Additionally, his data suggested that same-sex couples were twice as likely to raise a foster child as opposite-sex couples.

The case eventually wound its way through the legal system and was one of the four marriage cases that went to the U.S. Supreme Court in 2015 that were collectively known as *Obergefell v. Hodges*. When the Supreme Court took up these landmark cases for marriage equality, Gates again submitted an amicus brief, one of more than 100 submitted. His data showed that nearly 27,000 same-sex couples in the United States were already raising about 60,000 adopted or foster children.

In Justice Kennedy’s decision, released June 26, 2015, he cited Gates’ brief:

“... Many same-sex couples provide loving and nurturing homes to their children, whether biological or adopted. And hundreds of thousands of children are presently being raised by such couples. See Brief for Gary J. Gates as Amicus Curiae 4. Most States have allowed



gays and lesbians to adopt, either as individuals or as couples, and many adopted and foster children have same-sex parents, see id., at 5. This provides powerful confirmation from the law itself that gays and lesbians can create loving, supportive families.”

“It informed the way Kennedy thought about the issue,” says Gates. “It’s not going to make the big headlines ... but I think it makes a difference.”

As news of the decision spread instantly through social media, the hashtag #LoveWins exploded within minutes on Instagram and Twitter, and Facebook debuted a tool that allowed users to instantly put a rainbow over their profile pictures—more than 26 million users participated at last count.

But for many, the most significant image came the evening of June 26—two days shy of Stonewall’s 56th anniversary—the White House draped in gay rights rainbow light.

“That just completely blew me away,” says Gates. “It just goes to show the dramatic change.”

Although it’s undeniably the most monumental accomplishment in the fight for broader LGBTQ rights to date, there are still battles on the horizon.

Equality Fight Continues

Currently, many LGBTQ advocates are seeking broader and explicit protections for LGBTQ individuals from housing and workplace discrimination. Adults living in many states can still be fired for who they are or whom they love. A federal law explicitly banning discrimination based on sexual orientation or gender identity in private workplaces or in regards to housing nationwide is still waiting in the wings.

And as the marriage equality fight moves further away in the nation’s review mirror, transgender issues have now stepped fully into the spotlight:

In May, Orange Is the New Black star Laverne Cox, a transgender female, was featured on the cover of Entertainment Weekly. But it was former Olympic Gold medalist Caitlyn Jenner’s interviews this summer with Vanity Fair and Diane Sawyer, and Jenner’s speech at this year’s ESPY Awards (hosted by sports channel ESPN) that opened the most eyes to the issues facing transgender individuals today.

“It’s not just about one person,” Jenner declared from the ESPY stage, as the recipient of the 2015 Arthur Ashe Courage Award. “It’s about thousands of people. It’s not just about me. It’s about all of us accepting one another. We’re all different; that’s not a bad thing, it’s a good thing.”

Interest in LGBTQ as a whole is only increasing. Nowhere is that truer than on Carnegie Mellon’s campus, says English professor Kristina Straub, who also heads up the gender studies minor. Over the past year and a half, she’s witnessed a spike in interest in gender studies classes. “We cannot get enough on the books. ... We’ve gone from a half-full class once a year to offering it twice a year—and going to a waitlist every time.”

Also, the university now offers gender-neutral housing and a health-insurance option that covers transition-related care for transgender employees.

It’s clear that we’re living in a new era from Gates having to fly to Toronto to get married. He takes pride in knowing that his numbers helped make the changes happen:

“LGBTQ people now know that there are others out there just like them.”



ALUMNUS PRODUCES TWO MOVIES AT SUNDANCE

By Nicholas Ducassi

In 2016, Rachel Xiaowen Song graduated from Carnegie Mellon University's Masters of Entertainment Industry Management (MEIM) program. One year later, she signed on to produce for two feature films, "A Kid Like Jake," starring Jim Parsons (CBS's "The Big Bang Theory"), and "Nancy," starring Ann Dowd (Hulu's "The Handmaid's Tale"). This month (Jan. 18-28) both are premiering at the prestigious Sundance Film Festival, where Song is hoping to sell the film's distribution rights to major Hollywood players.

This year's Sundance festival is not Song's first. Throughout the two-year program, MEIM students attend several prominent film festivals, including Cannes, Sundance and the South by Southwest Film, Interactive and Music Festival.

This year's festival marks the 10th year that the MEIM program has brought its students to Sundance. MEIM is a joint program with CMU's Heinz College of Information Systems and Public Policy and the College of Fine Arts.

"The trip highlights the importance of the deals that are being made daily at the festival," said MEIM Director Dan Green. "It's especially gratifying to go to the festival and have faculty, alumni or current students involved with one of the films being screened."

At the 2017 Sundance festival, students attended the screening of "Crown Heights," a film executive produced by MEIM faculty member Jonathan Baker, which went on to win the Sundance Audience Award for Best Dramatic Feature. Additionally, Carnegie Mellon School of Drama alumna Chante Adams took home the Sundance Special Jury Prize for Breakthrough Performance for her work in the film "Roxanne Roxanne."

Song said attending Sundance during her final MEIM semester was inspirational.

"Sundance was the first real filmmaker-driven festival I'd been to, and going there really helped shaped my career path," she said. "Since I was a child, I've always loved watching films ... but after Sundance, I knew I wanted to pursue making them. I knew I wanted to be a producer."

Prior to attending Sundance, Song had worked primarily in film financing, with tenures at the international sales agency IM Global and production company Kylin Pictures ("Hacksaw Ridge"). In 2015, Song co-founded the film financing company Vantage Entertainment. As its head of business, she brokered deals between U.S. based productions and Chinese-based financiers, including the film "Billionaire Boys Club," starring Ansel Elgort ("Baby Driver").

Hoping to work more closely with directors and writers, she left Vantage to found the production company XS Media in early 2017. Now, she's "making a bigger difference than just putting together \$300 million for a slate financing deal," Song said. XS is focused on "making something for the audience and creating a spontaneous, genuine voice for them. Maybe you'll change their lives."

"A Kid Like Jake" and "Nancy" are XS Media's first two films, and "the only two films I did this year," Song said. "I feel incredibly lucky."

"The mission for XS is to make filmmaker driven projects," Song said. "To spend the energy and capital on development and to nurture younger talent – especially writers and directors, for projects with award potential and cross-platform profitability."

Song, who was born and raised in China and is bilingual, said XS projects include English and Chinese-language films and television shows. Joining her at XS is MEIM alumna Julie Zhang, who serves as director of development.

"We're both from China," Song said. "We're developing some Chinese language features with some up-and-coming Chinese directors and writers." One of the features is the Chinese-language feature film "YOYO." Song said she hopes to bring her films to Chinese theaters.

"The cinephile audience in China is growing," Song said. "They're hungry for content."

XS English-language feature films include "The Zero," about a young boy who contracts a mysterious fatal virus, which Song is producing with 2012 MEIM alumnus Jonny Paterson.



A still from the Sundance 2017 Film "A Kid Like Jake"

"I met Rachel through the MEIM program," Paterson said. "Her drive and passion to be a producer was something that struck me from the first time we met. She was inquisitive yet knowledgeable, and very passionate. She's done a remarkable job in a short period of time to have two films at one of the world's most important film festivals ... I'm excited about what her future holds and think the sky is the limit for her as a film producer."

"A Kid Like Jake"

"A Kid Like Jake" follows a pair of young parents, played by Parsons and Claire Danes (Showtime's "Homeland") as they raise their transgender 4-year-old child in New York City.

"I loved the script immediately," Song said. "It's such a strong and original story. I was the first financier on-board." Directed by transgender director Silas Howard ("Transparent," "This Is Us"), "Jake" also stars Octavia Spencer (Academy Award winner for "The Butler"), and Priyanka Chopra (ABC's "Quantico").

Even though the film's budget is "small," said Song – under \$5 million – "the stars are huge." Parson's company "That's Wonderful Productions" purchased the film rights after watching its original incarnation as a play at New York City's Lincoln Center Theater in 2013. The film is Parson's first leading role in a feature film, following a supporting role in 2017 Best Picture nominee "Hidden Figures."

"'A Kid Like Jake' is the first English language film that I produced and was extensively involved in," Song said.

"A Kid Like Jake" will premiere out of competition in the Premieres category, typically reserved for bigger budget films. Though Song and her fellow producers will seek to sell the distribution rights to "A Kid Like Jake" at Sundance, Song has already secured its Chinese distribution rights.

"Nancy"

"Nancy" stars Andrea Riseborough ("Birdman"), Steve Buscemi (HBO's "Boardwalk Empire"), Ann Dowd (Hulu's "The Handmaid's Tale") and John Leguizamo. It will compete for Sundance's top honors in the U.S. Dramatic competition. The film follows a woman who grows to believe she was kidnapped as a child and ventures to learn the truth. Nancy, produced in part by female-driven film fund Gamechanger Films, sported an all-female production and creative team.

"When I found out that every single executive producer on Nancy was female, I thought it was important that I get on board," Song said. "I had no idea it would get into the US Dramatic Competition." Song said she has already sat down with several interested distributors.

MORE THAN A PRETTY FACE

*How Ian Harding is Using His Success to
Marshall Support for Lupus Research*

By Nicholas Ducassi

Ian Harding is thousands of miles from his Los Angeles apartment. It's 2010, and the actor—who just graduated from Carnegie Mellon's drama school a year earlier—is in Paris' historic Louvre, where he is wandering nonchalantly through the hallways and soaking in the great works.

Harding has had little downtime since graduating. Almost immediately, he was cast in *Pretty Little Liars*, a teen mystery-thriller television show on ABC Family. After shooting the first 10 episodes, he is enjoying some well-earned time off.

Turns out, he isn't the only *Liars* cast member to vacation in Paris. He bumps into Tammin Sursok, who plays teen Jenna Marshall. Small world, indeed. The two are catching up when Harding notices flashes out of the corner of his eye. But of course! They're standing in front of the Mona Lisa, which other tourists must be trying to photograph. The actors step aside. But the flashes continue after they move out of the famous painting's sight lines, and Harding finally realizes the cameras aren't aimed at da Vinci's work. They're aimed at him and Sursok. Seriously? The show's pilot had only just debuted. The other episodes hadn't even aired yet. Are they actually being recognized? Yes. Yes, they are. And it is only the beginning.

Later that summer, *Pretty Little Liars* would cement itself as ABC Family's newest hit, with 2 million weekly viewers. Now in its fifth season—and recently renewed for a sixth and seventh—*Liars* has cemented Harding's status as one of Hollywood's newest heartthrobs and most bankable young stars.

Born into a U.S. military family in Heidelberg, Germany, Harding moved to Virginia when he was only a few years old. Growing up, he had a wild imagination, a mouth that ran, and a mind that raced. "He could talk a dog off a meat wagon," his grandfather would say.

He was a cute kid, if a bit chubby, with curly black hair and baby-blue eyes that melted hearts. With a legion of stuffed animals at his command, he would weave wild tales about their adventures together for anyone within earshot—which was quite often everyone. "Use your inside voice," Harding's mother had to constantly remind him.

Given his flair for the dramatic, his sister Sarah suggested he join the drama club at his all-boys high school. Harding followed her advice and was glad he did. When he was cast as the loud, blustering boss in the school's production of *How to Succeed in Business Without Really Trying*, he realized performing was his calling.

Yet, as animated as he was growing up, he was quiet—shy even—early in his training at CMU. "He was always very dear, very charming, but we really needed him to be bolder," remembers drama professor Barbara Mackenzie-Wood.

Harding doesn't disagree: "I think it was this profound fear that I wasn't going to get it right. I was really scared of making a mistake."

Mackenzie-Wood's prescription? The chicken dance—sort of. She assigned him and a classmate a scene in which they had to dress up as six-foot-tall chickens and cluck their way around the stage. "It forced me to let everything go," recalls Harding. "I knew it was going to be absurd. But our mere existence is absurd, ya know? I really learned how to just be me."

It was a turning point for Harding. "All of a sudden, he bloomed," says Mackenzie-Wood.

That wasn't his only transformational moment on campus. One day while walking across the Cut during his freshman year, he was stopped by a classmate who noticed Harding wearing a purple rubber band on his wrist, which was adorned with a butterfly—the logo for the Lupus Foundation of America.

"Who do you know with lupus?" his classmate asked.

"My mom," said Harding. She had been diagnosed with lupus when he was only 7 years old. There is no cure, and she'd been dealing with the autoimmune disease since then.

"I'm so sorry," the classmate replied. Harding could sense the pity in his friend's voice and sought to reassure him: "No, no, it's not that bad. She's okay."

"Oh. My mom had it." Had. The word hung in the air.

Harding's mother had done her best to not let her condition impact her children's lives. "I didn't want them to grow up with a sick mother," she says. "I tried very hard not to look sickly." Other than having to lie down when her joints ached, or wearing large-brimmed hats when she went outside—symptoms of lupus include swollen joints and sensitivity to the sun—her efforts were so successful that her son didn't even realize the disease could be fatal.

That night, Harding called his mother. "You never told me you could die from this!" he exclaimed. "Yes, I did," she replied, calmly.

"Well, you didn't focus on the bad parts of it!"

Reflecting on that conversation, Harding says, "Up until then, I don't think I really comprehended how serious lupus could be."

Senior year at CMU, he brought comedic chops to one of the lead roles in the school's production of the romantic farce *The London Cuckolds*. It's about a group of wealthy men and their wives—all of whom are covertly sleeping with younger men. Harding was cast as, who else, the heartthrob. Says the show's director and current head of acting Don Wadsworth: "Not only is Ian incredibly good looking—you can't deny the 'cheekbones of death,' I say—but he's amazingly quick. That's really the way to break women's hearts. Make 'em fall in love with you, and then make 'em laugh. Of course, then he lands this amazing job where he's quite the ladies' man. We prepped him for it, I think," he says with a wink.

Able to secure a top-level acting agent and manager during his senior year, Harding moved to Los Angeles after graduating. Before the summer was over, he had landed the lead role on *Pretty Little Liars*. The show, a mystery drama based on a bestselling young-adult novel, follows a group of four high school girls who receive messages from a mysterious person, threatening to reveal their secrets. Harding plays high school English teacher Ezra Fitz. Although the show features young stars who are beautiful and charming, its appeal is more than skin deep. Beyond entangling its characters in love triangles and teenage gossip, it artfully tackles tough issues that its audience is wrestling with themselves, including bullying, homosexuality, and mental health. Sure, Harding puts his cheekbones and baby blues to use, but he plays Fitz with a sincerity, earnestness, and maturity far above what one might expect from a man who makes girls literally shriek in public.

The show became ABC Family's highest-rated series premiere on record across the network's target demographics, women ages 18 to 34. Just as quickly, Harding's life changed drastically. After being recognized at the Louvre, he began to get stopped at malls and in restaurants. His adoring young fans—almost always teenage girls—were usually sweet and respectful, but were never shy about asking for pictures and autographs. "There's this unwritten rule in Los Angeles," says Harding's sister, Sarah. "When you see a celebrity in public, you can feel free to stare at them, but you don't approach them. That rule does not apply to teenage girls."

His popularity led to a 2010 Teen Choice Award. The event airs on Fox and honors the year's biggest achievements and entertainers as determined by teen viewers, who are the only voters. After more than 100 million votes were tabulated, Harding won the surfboard trophy for "Summer TV star: Male." In 2011, he won the award again. The next three years, he also won for the same role in the "TV Actor: Drama" category.

By the time he won his third Teen Choice Award, his social media accounts had exploded in popularity. Through Instagram and Twitter alone, he has received his share of marriage proposals, winking smile faces, heart emoticons—the kind of adulation that would be found in glittered ink on folded-up notebook paper if this wasn't the 21st century and the fans didn't have a direct pipeline to one of their favorite actors.

Having such a legion of fans gave Harding an idea. Instead of using social media to merely fan the flames of his popularity, he thought of harnessing the power of his stardom for a worthy cause: Lupus awareness. The lion's share of *Pretty Little Liars* fans and his social media followers are young women, the demographics line up perfectly. Lupus is most often diagnosed in women between the ages of 15 and 45.

These social media figures will put into perspective how much power Harding wields.

Instagram: Harding has more than 2 million followers; Lupus Foundation of America has fewer than 7,000 followers.

Twitter: Harding has more than 1.5 million followers; the foundation has fewer than 25,000 followers.

Harding began posting pictures of himself at Lupus Foundation activities, including fundraising drives and the national Walk to End Lupus Now. Through the walk, he raised more than \$10,000. He has also launched fundraising campaigns for the Lupus Foundation that have capitalized on his fans' adoration. For \$20, fans were able to buy a limited-edition T-shirt that says, "Future Mrs. Fitz," in honor of his *Liars* character. "It's mildly embarrassing, of course," says Harding. "But this is what's going to sell, and it raised money for a great cause. So ... why not?"

More than money, though, it's about raising awareness of a disease that affects 5 million people worldwide. After all, even with his own mother battling lupus since he was in grade school, Harding didn't appreciate the full danger of the disease until that chance encounter on CMU's campus.

His public-service efforts are paying off. At a recent Walk to End Lupus Now, he met a young woman who had been diagnosed with lupus. She told him how she had fallen ill the year before. After weeks of tests, doctors were still unsure what was causing her symptoms. Remembering Harding's activity on behalf of the Lupus Foundation, she suggested perhaps lupus was the culprit. Subsequent tests proved her intuition was correct—she profusely thanked Harding and encouraged him to continue his advocacy, which he says he plans to do.

Meanwhile, with *Pretty Little Liars* currently ABC Family's most watched series, his success and popularity have garnered him auditions for lead roles in big-budget films. But while he's patiently waiting for just the right fit, he's not letting himself get pigeonholed into heartthrob roles.

He currently has several projects in early development, and some of the roles, he says, are undeniably darker than his pretty-boy schoolteacher Fitz. Worries, though, that such roles could harm his image are nonexistent. "I'm an actor. I act. I'm attracted to complicated and difficult parts, and some of those parts aren't nice," he says.

Because, ultimately, he says it's not only about what success you achieve—it's about what you do with that success. "The great thing about doing a television show is that it provides you with the financial cushion. Not so you can have a Maserati collection, but so that you can pursue projects that are interesting, challenging, diverse—because you love it."

It's all a means to an end, and he says the same goes for his fame. He could let his popularity simply feed his ego, or, he could use his more than a million fans to raise support for causes such as lupus awareness.

He chose the latter—his way, he says, to pay it forward.

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DRAMATIC ENTRANCE

By Nicholas Ducassi

Larry Powell steps on stage of the Mark Taper Forum in downtown Los Angeles. The 700-seat theater, 3,000 miles from Broadway, has for decades hosted Hollywood stars hungry for West Coast stage time. The actor—who received his professional training in Carnegie Mellon University’s rigorous theater conservatory program—has already established a respectable career through starring roles in regional theaters across the country. He doesn’t have an Oscar or an Emmy yet, but at 29—and with stellar reviews in *The New York Times* for two Off-Broadway plays already under his belt, he might be on his way to one.

He’s far from the first alumnus of CMU’s School of Drama theater program to make a living as an actor, which he credits to how students learn to transform pages of ink into living, breathing characters during their conservatory training.

It’s not uncommon for the drama school’s alums to bump into each other on set or backstage. A few examples include Broadway’s smash-hit *“Hamilton,”* which features Leslie Odom Jr. (A’03) and Renée Elise Goldsberry (A’93) in starring roles, and the second season of FX’s award-winning and critically acclaimed television show *“ Fargo,”* which features three generations of CMU drama school graduates—Ted Danson (A’72), Patrick Wilson (A’95), and Rachel Keller (A’14). When you’ve been harvesting a crop of working actors year after year since 1914, it’s not so much serendipity as the result of the school’s time-tested techniques.

The school’s success is defined by its consistency, but individual acting careers unfurl in fits and starts. Dive into the biography of nearly any success story, and you’re bound to unearth bouts of unemployment, struggle, and long stretches spent wandering in the dark.

The reality of the business is that no matter one’s pedigree, the odds of success—whether that’s defined as making a living in Hollywood, Broadway, or otherwise—are long. Don Wadsworth, head of the school’s acting program, says that for most actors, the big break—if it comes at all—arrives “not with the first or second job—but with the 40th or 50th.” That’s why the program instills the principles of technique, perseverance, and flexibility. “Those are what could give you a career,” says Wadsworth, “instead of just one or two flashy parts in your 20s.”

Of course, there are stories of quick success among CMU actors—Wadsworth points to recent graduates Casey Cott (A’16), who, just days after his New York showcase this March, was on a Vancouver-bound flight to shoot the pilot for a new television show on the CW called *“Riverdale.”* Or Denée Benton (A’14), who is now making her Broadway debut as the lead in *“Natasha, Pierre and the Great Comet of 1812.”*

But quick success is not the norm, and it by no means guarantees a career. Drama graduate Michael Finkle (A’09) now works for William Morris Endeavor Entertainment, one of Hollywood’s most powerful talent agencies, which represents multiple Academy Award-winning actors. He says that maintaining a career in show business boils down to the values that the School of Drama has always espoused: “Education, passion, commitment. ... It’s easy to get a ‘job’—it’s much harder to maintain value. At the end of the day, it’s both a business and a craft. ... You can certainly make a lot of money and blow through it quickly. But if you want to achieve longevity—that’s where craft comes in.”

But technique, perseverance, and flexibility only help one weather the dark days—they don’t make them any brighter. Like many young actors, Powell’s early career trajectory resembled the spikes and valleys of an irregular heartbeat on an EKG: months of acting work interspersed with unemployment checks, food stamps, and the word “no.”

Lured by the prospect of a television and film career, he moved to Los Angeles—his hometown—soon after graduating in 2008. One year later, though, he had added only one line to his resume—a play—and his agents weren’t all that interested in him doing another. On some level, he understood their reluctance: agents, who help put the “business” in “show business,” work entirely on commission, and one day of film or television work can pay more than one month in a play. But Powell didn’t spend four years watching recordings of Broadway plays in the sun-starved basement of the CMU library to work on his tan while waiting for his phone to ring.

Moreover, just as he was trying to get a film and television career off the ground, an explosion of powerful new plays was taking American theater by storm, many by young playwrights of color like Tarell Alvin McCraney and Katori Hall. The *Los Angeles Times* recently dubbed the era “the most revolutionary moment in American playwriting since

Sam Shepard,” and others “began reinventing the dramatic wheel in the 1960s.” New York City was its epicenter, and Powell says that being 3,000 miles away made him feel as if he was “missing out.” With Hollywood giving him the busy signal, he gave New York a call and moved east in June 2009.

Pursuing a professional acting career usually entails moving to an infamously expensive city: New York or Los Angeles. To survive, many aspiring actors work unfulfilling jobs that offer flexible schedules in lieu of higher wages. Some bartend, others babysit or wait tables or work with temp agencies.

New York City drained Powell’s meager savings in less than a month. In order to pay the rent for the room he was subletting from a former classmate, Patina Miller (A’06), who was in London starring in the musical *“Sister Act,”* he took the first job that came his way: cleaning up at a tanning salon in Queens.

He recalls the routine vividly. After each tanning session, he would lift the cover of the bed, grab the bottle of disinfectant and the rag slung from his utility belt, and spray the tanning bed’s glass. In one instance, just as he restored the bed’s glass to a clear sheen, his manager, three years his junior, barked at him: “Damn man, you’re sweating! Calm down! Don’t work so hard.” Powell replied: “No—I’m not gonna stand around here like you. That’s how I stay here. I’m trying to get out of here.”

Knowing that turning his passion into a paycheck wasn’t going to be easy, he had listened closely to the advice doled out by visiting alumni during his CMU days. Successful CMU drama school graduates such as Zachary Quinto (A’99), Billy Porter (A’91), and Patrick Wilson (A’95) are just a few who have visited the campus in recent years and shared with current students the stories of their journeys. A common thread? That every actor’s path is unique. Advice? Never let your survival job break your spirit.

Yet, Wadsworth acknowledges that words of wisdom can only do so much: “To think that your career is going to be like anyone else’s is crazy. The work is so surprising and has so many detours—there’s really no way to prepare for it. You just have to learn it—live it—yourself.”

No wisdom could have ever prepared Powell for the fact that his early struggles would smell like chemical coconuts. Luckily for him, it didn’t last long. Less than a month into his tanning salon tenure, he booked his first New York show—as an understudy in the play *“Broke-o-logy,”* directed by Tony-nominated director Thomas Kail and produced by Lincoln Center Theater. Named “the pre-eminent theater in the country” by *The New York Times*, Lincoln Center Theater is the largest not-for-profit theater in the country and has launched several shows to eventual Broadway runs.

It gave Powell a shot of confidence at an especially dire time: “I had nothing—I was on food stamps, my phone was off. ...” He didn’t even find out he had booked the role until the show’s casting director, who had already left him a voicemail, sent him an email after not hearing back from him.

Most importantly, the show granted him entrance into the theatrical acting union known as Actors’ Equity. One of the hallmarks of a professional actor, joining the union enabled him to audition for other professional shows at Actors’ Equity offices in midtown Manhattan, which are closed to those without a card. As an actor, joining equity is the difference between saying you’re good enough to be a professional baseball player, and actually being one. Until you have the card, you’re all talk.

Fast-forward seven years. His resume boasts dozens of plays, workshops, and readings, and he’s performed in Off-Broadway and regional theaters across the country, from New York to Louisville to Los Angeles. Though he hasn’t performed on Broadway yet, he’s earned a living working with

some of American theater’s most important playwrights and directors—including several that prompted his leap from Los Angeles to New York in 2009.

Most recently, his work included a starring role as Pastor Joshua in the play *“The Christians,”* first produced at the Humana Festival of New American Plays in Louisville, Ky. The Humana festival, which *The New York Times* calls “the most prominent new-play showcase in America,” is the birthplace of three Pulitzer Prize-winning plays.

After its Humana production in 2014, Powell continued on with *“The Christians”* in its Off-Broadway run. After New York, the show has moved on to Los Angeles’s Mark Taper Forum, with Powell again playing Pastor Joshua.

That a play brought Powell back to Hollywood’s doorstep shouldn’t be all that surprising, because, ultimately, survival as an actor means opening up as many revenue streams as possible. For a school that has always prided itself on graduating working actors—not just those who become household names, but those who earn their livings doing what they love, like Powell—it means graduating students who are employable not only in theater, film, and television, but also in paycheck-generating media like commercials, voiceover work for audiobooks, animations, and videogames.

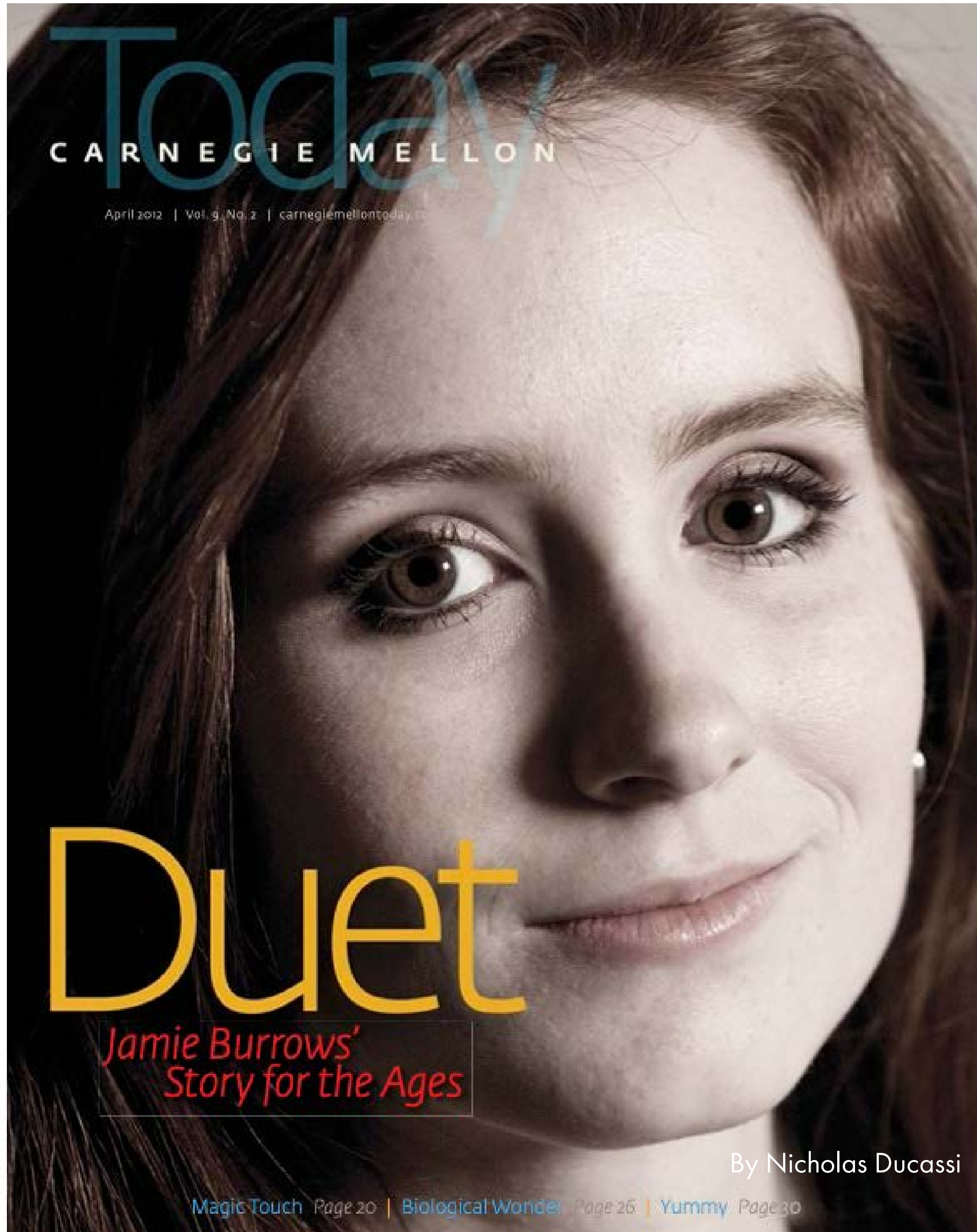
Peter Cooke, head of CMU’s School of Drama, says that “part of my job is to say, ‘In 20 years’ time, where will the jobs be? What might we need in five years’, 10 years’, 15 years’ time?’” For a school that was founded more than a century ago, that means threading the needle between teaching the classical theater acting techniques that stamped “Carnegie Mellon” onto the entertainment industry and preparing students to capitalize on new opportunities—especially those created by emerging technology.

To that end, Wadsworth says the school has added courses in voiceover work, camera acting techniques, and on-camera auditions. Moreover, because “people find talent on YouTube all the time, ... we encourage our students to not wait for the phone to ring, but to go out there and create work for themselves. ... Nowadays, you need to be a hyphenated performer: an actor-director, writer-director, actor-writer, et cetera.”

Right now, Powell is riding a hot streak. He is currently in rehearsals for the West Coast premiere of Suzan-Lori Park’s play *“Father Comes Home from the Wars (Parts 1, 2 and 3),”* a three-hour Civil War epic that opens on April 19th at the Mark Taper Forum. In a bit of CMU serendipity, his starring role is being understudied by Donovan Mitchell (A’11).

In *“Father,”* Powell plays a runaway slave whose foot was cut off. Given the kinds of roles he finds he’s drawn to—“those that speak up, that fight back, that are resilient”—he seems to have been perfectly cast. “That’s my career—that’s my life. I don’t care if I don’t have any money, or if I’m embarrassing myself—I like characters that go through that and live through that and live with that, because that’s what I’ve gone through. Those are the characters I love stepping into, those who—no matter what—fight for their place at the table, or else sing from the kitchen.”

Powell, the son, grandson, and great-grandson of preachers and ministers, says that though he hasn’t “been ordained by any seminary, or any spiritual group,” he has “been ordained by the blood, sweat, and tears of the hustle and the grind and the calling to be a great actor, storyteller, and dramatist. That is who I am. And I think that is something I learned at Carnegie Mellon.”



Surrounded by wildflower fields near the edge of a rocky cliff on the island of Belle-Île -en-Mer, France, Jamie Nicole Burrows stares out to sea. All summer, she has been taking these hikes. They've helped the Carnegie Mellon voice major decompress after training at the Lyrique-en-Mer opera festival with some of the world's greatest singers. The hikes have also given her an interlude before her upcoming senior year. What's in store for her might intimidate a burly bari-tenor, let alone this 98-pound, five-foot-one soprano.

Before her May 2012 graduation, she and 190 of her classmates will perform on April 2 at what many consider the mecca for musicians: New York City's Carnegie Hall. The concert is a celebration of the School of Music's Centennial Anniversary and will reprise a March 31 celebratory concert at Pittsburgh's Benedum Center. In addition to the students performing, alumni young and old, with more than a few Grammy and Tony winners among them, will take the stage. Burrows has this to look forward to while trying to maintain her 3.9 GPA and fulfill her senior recital. And figure out what to do after graduation. Gulp.

No matter how stressful the upcoming school year becomes, Burrows reassures herself during her ocean-side walks that she can handle whatever happens because of her best friend, Lauren Nicole Eshbaugh.

It's a warm afternoon during the first day of Carnegie Mellon's August 2008 freshmen orientation week. In between the scheduled activities, Burrows, a doe-eyed freshman, watches from a campus bench as hoards of classmates she has yet to meet pass by. Her parents are traveling back home to Tucson, Ariz., about 2,000 miles away. Although Burrows doesn't know anyone, she already feels at home. Suddenly, her thoughts of tranquility are interrupted.

"Hi!"

Burrows looks up. A modelsque blonde, wearing a flowing dress and perhaps too much blush, towers above her. "I'm Lauren." Burrows recognizes her from orientation activities. They get acquainted, and when they realize they have more in common than they can share from a campus bench, they head to Eshbaugh's dorm room.

In addition to their identical middle names, they both have an insatiable appetite for performance training, a deep love of music, and a shared history in youth choirs. Neither can wait for their next four years of studies at the School of Music, widely praised for its conservatory training, dual emphasis on academics and performance, and tradition of graduating legendary musicians. The school's vocal alumni roll-call is rife with Metropolitan Opera and Broadway singers. And the list of non-vocal majors is just as notable, including composers of Hollywood films and television shows, professors in the best music schools in the country (including Carnegie Mellon), and principal instrumentalists and conductors in renowned orchestras around the world.

As for Burrows and Eshbaugh, it's as if they will step into the shoes of past success stories. With her red mane and fair complexion, Burrows could be mistaken for soprano Christiane Noll (A'90), star of several award-winning Broadway musicals, including Jekyll & Hyde, Urinetown, and the most recent revival of Ragtime. Eshbaugh has her own alumna doppelganger in mezzo-soprano Heidi Skok (A'90), whose statuesque presence adorned Metropolitan Opera's stage for more than a decade.

Right now, though, they're just incoming freshmen with big lungs and a lot to learn about music, life, and each other. Burrows is soft-spoken—a self-described "music nerd" who mostly keeps to herself; Eshbaugh is gregarious, immune to intimidation, and addicted to adventure. Soon, they're inseparable . Although Burrows is a stranger to Pittsburgh, Eshbaugh knows her way

around, having been raised in Indiana, Pa., just 60 miles from Pittsburgh. So, for the first few weeks of the semester, Eshbaugh plays tour guide. From the symphony to diners, no Pittsburgh staple is out of their reach. Sometimes, when Burrows is too tired to make the walk to her off-campus dorm, she has a sleepover in Eshbaugh's Donner House room, where the two philosophize until their eyes close.

In October, they begin working in the costume department for an upcoming music school production. One night, while climbing the stairs to the costume shop, Eshbaugh stops at the second-floor landing.

"Are you OK?" Burrows asks. Eshbaugh says she feels queasy, but they press forward. At the next floor, Eshbaugh says she has to throw up. Burrows snatches a trash can. It's not the first time in the past few weeks that Eshbaugh has been ill. First, her back hurt. Then, she had leg spasms. Now, she's throwing up. They both agree she should go to the student clinic. They walk there, but it's closed. What to do? Perhaps Eshbaugh should go the hospital and get checked out, just to be safe. Burrows calls campus police from her cell phone, and a few minutes later, they're on their way to the hospital in the back of a campus squad car.

The hospital staff administers preliminary tests, and Eshbaugh calls her parents, who are concerned enough to get in their car and make the hour drive to Pittsburgh. Through it all, Eshbaugh doesn't lose her sense of humor. She walks up to the registration nurse and asks if she could ensure her attending physician is male. And cute. Burrows blushes. When Eshbaugh's parents arrive, they thank Burrows for staying with their daughter, and Eshbaugh's father gives her a ride to her dorm.

Back at the hospital, doctors press on Eshbaugh's abdomen. She winces. Maybe it's her gallbladder? More tests. When the bloodwork results come, the health-care team is troubled. Perhaps the tests are wrong. They run them again. At 7 am the next morning, an oncologist steps into Eshbaugh's room. "There's only one explanation for blood platelets to be that low and calcium to be that high," he says. "Something is growing, and it's growing rapidly." "Like a tumor?" Eshbaugh asks. Like a tumor.

In class, Burrows doesn't see her friend. She's worried. Eshbaugh never misses a class. After a few days of small-talk texting back and forth, Burrows and some other music majors decide to visit Eshbaugh in the hospital. When they arrive, Eshbaugh knows her friends are wondering what's wrong. Tears stream down her cheeks as she tells them that she's taking a medical leave from school. She has cancer. It's called rhabdomyosarcoma—a rare, aggressive cancer of the connective tissues. It will require up to 11 months of chemotherapy, and blood transfusions. Hopefully, she'll be in remission then and can resume her studies.

The students hug Eshbaugh, the last time they'll be able to do so for a while. Once she starts chemo, her immune system will be compromised. A hug or a handshake might have serious ramifications. So, the next day, Burrows buys pink and purple embroidery floss at the University Center art store and twists them together into a friendship bracelet. During her next visit, she ties it around Eshbaugh's wrist. "Even if I can't touch you," Burrows tells her, "I can always hold your hand."

Eshbaugh begins her monthly treatment regimen: 48 hours of chemotherapy, followed three weeks later by another five days of eight-hour chemotherapy sessions. After every chemo cycle, Eshbaugh receives a blood transfusion. She usually gets a fever, too, which forces her to stay in her hospital room. She can't receive visitors for days. Then the cycle begins again. Chemotherapy, blood transfusions.

Despite the grueling routine, the best friends work out a schedule of their own. Burrows visits Eshbaugh once a week; they keep in touch via cell phone and In-

[View in Carnegie Mellon Today digital archives](#)

ternet video-calls when Eshbaugh is in Indiana; and, once a month, if Eshbaugh feels well enough, they venture to the symphony or opera.

The chemo robs Eshbaugh of her hair and her eyebrows, but she doesn't let it steal her beauty—especially when she goes out with Burrows. On those nights, Eshbaugh always dons a bright red wig and colors in eyebrows to match, so that the two can take on the town as—in Eshbaugh's words—"two hot red gingers." And though she can't sing because the chemotherapy affected her vocal cords, Eshbaugh attends the weekly voice seminar class when she can, where she can hear undergraduate, graduate, and artist diploma voice majors perform.

A few weeks before classes start in fall 2009, Burrows gets a phone call. It's Eshbaugh. Her doctors gave her the all-clear. Her cancer is in remission. Eshbaugh is back!

The best friends return to their old ways—the Zebra-Lounge lunches, the inside jokes, the Cheesecake Factory dinners. They're in different classes now because Eshbaugh is still a freshman. But Eshbaugh is just happy to be training again, and Burrows couldn't be happier to have her friend back. Fittingly, in mid-October, Eshbaugh makes plans to walk the cancer survivors' lap in conjunction with the campus' "Relay for Life," an overnight relay used to raise money for the American Cancer Society. Not feeling great that night, she has to walk slowly; later her legs begin to swell and hurt, driving her to tears. The next day her doctors perform MRIs and CT scans. They discover that cancerous tumors in her brain and spine are impeding her mobility, causing her legs to stiffen. And they're growing.

She'll have to start radiation immediately, followed by chemotherapy and blood transfusions. Because living in the dorms is too risky, she'll have to make the daily 120-mile round-trip journey from her Indiana home. This time, though, Eshbaugh's not leaving school. "If I have to go to Pittsburgh every day," she tells her mother, "I'm going to class. I am not—I am NOT—staying home."

For the next six months, in addition to the commute, Eshbaugh balances radiation, chemotherapy, and blood transfusions with studying, private voice lessons, and nights out with her friends.

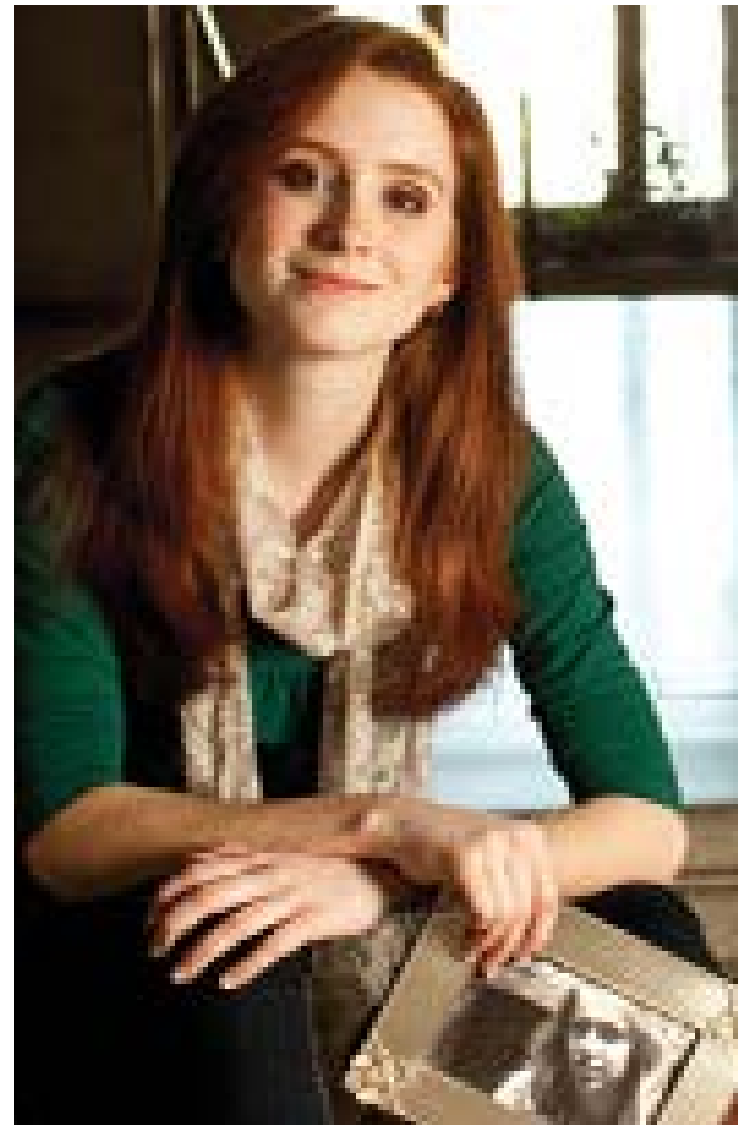
By April, the juggling gets harder. Eshbaugh begins losing the ability to walk—forced to use a walker, then a wheelchair. As her tumors grow and her health deteriorates, the School of Music students and faculty rally around her. No one would ever question the school's academic prowess; now, no one would question its heart. Her classmates make sure that whenever Eshbaugh arrives on campus, someone is there to meet her and push her to class; usually it's Burrows. And, in early April, the school throws a benefit concert in her honor.

As the academic year nears the end, Eshbaugh pushes on with her schooling despite being so weak that she sometimes falls asleep while taking notes. One of her professors, Natalie Ozeas, tells her: "Lauren, your grades are so good, you're going to get an A in this class whether you take the final or not." Eshbaugh's reply? "I'm going to take the final."

But just a few days after that vow, Eshbaugh enters hospice care. On a Sunday afternoon in early May, music professors Laura Knoop Very and Stephen Totter visit Eshbaugh in Indiana to deliver a book of handwritten letters from Eshbaugh's schoolmates. Her parents, at her bedside, choke back tears as they read them to her.

On Tuesday, May 4, 2010—just days shy of her twentieth birthday—Lauren Nicole Eshbaugh loses her battle with cancer.

Three nights later, Burrows and a group of music students "take" the Fence in



Jamie Burrows

memory of their friend. They blast music, sing, dance, and cover the Fence from top to bottom in bright red paint, drawing the letters L-A-U-R-E-N on the posts. For the final touch, they inscribe "Choose to Be Happy," Eshbaugh's mantra, on the middle railing. The next morning, along with dozens of other sleep-deprived music majors, Burrows boards the university-organized bus that will carry them to Eshbaugh's funeral. She sits alone for the 60-minute ride.

Recordings of Eshbaugh singing fill the church. A bouquet of pink roses adorns her casket. Her professor, Knoop Very, sings. Doves are released at the cemetery. After the service, Eshbaugh's parents hug Burrows. "She never took the bracelet off," Eshbaugh's mother tells her. "She's buried with it."

Burrows, grieving when she arrives in Tucson for summer break, volunteers in the oncology ward of a local hospital for the American Cancer Society. She shares information with cancer patients about resources available to them, coping methods, and, of course, Eshbaugh's story—how her best friend never stopped fighting. Never. Volunteering helps Burrows grieve, but returning to Carnegie Mellon in fall 2010 for her junior year is hard. Some classmates are further along in the grieving process. She considers taking a leave of absence. But then she thinks about her friend who never gave up. She won't either.

Throwing herself into extracurricular activities, she becomes the events chair for the Carnegie Mellon "Relay for Life" and soon discovers she's a natural at it. They need someone to sing the national anthem. She knows just who to call. Bagpipes? Got it. "I ended up asking all my friends to perform," she says. "And since so many musicians and performers were so close to Lauren, they were all very happy to come and be a part of it." She even joins in, singing "Amazing Grace" in four-part harmony with three classmates.

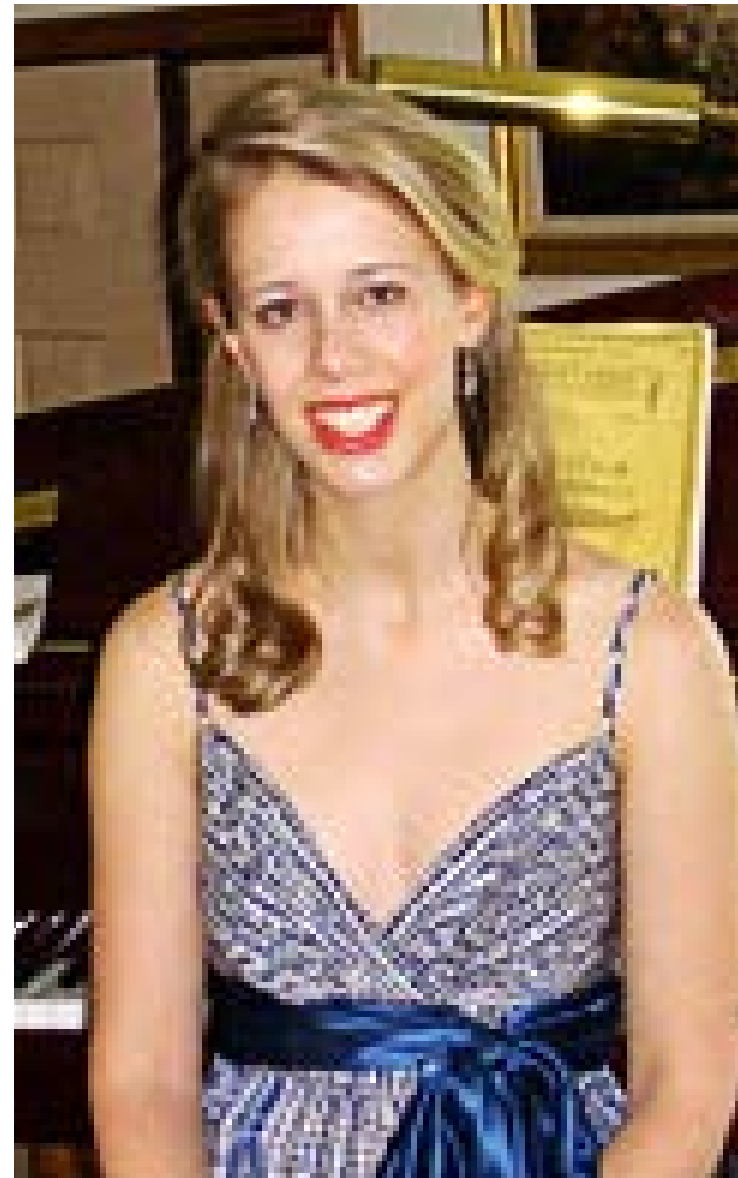
In the spring, Burrows performs with the Pittsburgh Pops All-Star College Chorus conducted by Grammy, Tony, Emmy, and Oscar winner Marvin Hamlisch. She also heads a new College of Fine Arts fundraiser: "Mr. Beaux Arts," a lighthearted version of a male beauty pageant. She does this while preparing for her junior recital, her most important performance yet. She saves the last line in her recital dedication page for the person who couldn't make it: To my Lauren—I truly have an angel with me tonight. Miss you every day, girlfriend.

At the end-of-year School of Music awards ceremony, the faculty announces the establishment of the Lauren Eshbaugh Memorial Award, created to honor music students who embody the qualities of Eshbaugh: academic achievement, musicianship, kindness, and support among musicians. The junior class inaugural winner—Jamie Burrows. After the ceremony, she hugs Eshbaugh's parents, whom she hasn't seen since the funeral. They ask her what she plans to do with the award money. She says it will help pay for her summer plans—a seven-week professional program in France, where she'll sing alongside opera legends and gain her first professional opera credits. The award's timing is divinely serendipitous: she'd otherwise be unable to afford the trip.

Now back in Pittsburgh for her senior year, Burrows' walks have changed from French cliff-side hikes to strolls through nearby Schenley Park. Unlike the naive freshman on that campus bench four years ago, Burrows says she's now prepared to handle whatever the future holds. That includes being among the performers for the upcoming Benedum Center and Carnegie Hall celebration concerts for the School of Music's Centennial Anniversary.

After she graduates in May, she's not sure what's next. Because of her tiny size, she'll probably get cast as a child for some time. But the young woman within is now anything but small. She knows that on one staircase step, ev-

Lauren Eshbaugh



First Word

A few words from the Executive Editor

When I received, via email, the first draft of this issue's cover story from the writer, Nicholas Ducassi, it was 3,297 words. Taking into account that the article had to fit into a five-page, 2,500-word space, I knew Nick and I would be having multiple conversations during the next week or two. He realized it, too, as his email noted:

Please consider this what it is: a first draft, and by no means a final version. Yes, it's way long, but I know you'll give me guidance on what can go (and I'm sure a lot can be condensed).

I've been working with Nick since his senior year at Carnegie Mellon. An acting major, he earned his degree in 2010, and he is still waiting to be discovered. But as a writer, consider him discovered. He has a gift for accurately chronicling engaging stories without sacrificing any relevant information. Anyone who read last issue's "Broadway Bound" feature about The Book of Mormon stars knows what I mean. I keep telling Nick, as I do to several of the magazine's other contributors, to start making story pitches to The New Yorker, Vanity Fair, and other respected magazines. Their writing, in my opinion, is that good and a big reason why Carnegie Mellon Today has won 57 editorial awards since 2007. (Glance over to the adjoining masthead to view the current awards.)

The cover story assigned to Nick was meant to be a quasi-profile of School of Music student, Jamie Burrows. The intention was that while telling her story, Nick could weave in why the School of Music—in the midst of celebrating its 100th anniversary—is such a special place.

With my red pen handy, I printed out the story's first draft and got to work. A few minutes later, I reached the end. There wasn't a red mark on the pages. The only things with a touch of red were my eyes, trying to hold back tears. Nick had told a tale filled with aspirations, with sadness, with triumphs, with hope. Here is perhaps the most telling line:

No one would ever question the school's academic prowess; now, no one would question its heart.

Of course, I let Nick know what a great job he did. We worked together to find a way to get the piece down to 2,500 words, 2,498 to be exact, and then I handed it over to the magazine's creative director, Tom Kosak, who always does a masterful job of complementing the words with the design (which is another reason Carnegie Mellon Today has won so many awards).

As delighted as I am with the end result of the cover story, "Duet" (I recommend having tissues nearby before reading), I'm just as pleased with the powerful, moving content in this issue's other stories—from the features to the News Flash briefs. You can read about everything from medical breakthroughs on the cusp ["Biological Wonder"] to the impact of today's technology on how we discover our favorite musicians ["Last Word"].

All in all, I believe it's another job well done by Nick and the rest of the issue's contributors, three-quarters of whom are Carnegie Mellon students, alumni, or faculty. As always, let me know what you think.

—Robert Mendelson
Executive Editor

[View in Carnegie Mellon Today digital archives](#)



HEROES' GREATEST SIDEKICK

WHILE GUIDING APPRIO INC. FROM A FLEDGLING FIRM INTO A ROBUST COMPANY WITH OVER 200 EMPLOYEES, NATIONWIDE OFFICES AND \$30 MILLION IN REVENUE, **DARRYL BRITT, MSIA '90**, HELPED TRANSFORM HOW THE NATION RESPONDS TO DISASTERS — AND SAVED COUNTLESS LIVES.

It's everyone's worst nightmare: A hurricane or earthquake strikes, leveling homes, filling hospitals and decimating infrastructure. In the ensuing 24 hours, as emergency responders erect triage tents and FEMA clears roads, the software-based solutions developed by Apprio Inc. go to work.

Apprio's emergency response and homeland security solutions use technology to streamline how the nation responds to disasters. When search and rescue teams pull victims from the rubble and input their status into tablet computers, they type it into software Apprio developed. When they send that information to medical tents, they send it across closed networks established by Apprio. Even the doctors and nurses who utilize that information in the field are there because Apprio's technology helped deploy them.

"Our work lives at the intersection of health care and emergency response," Apprio president and founder Darryl Britt said.

Even after five straight years on both the Deloitte's Technology Fast 500 list and the Inc. 5000 list of fastest-growing private companies — not to mention three consecutive years of employee and revenue growth, which earned Britt a Washington Smart CEO Future 50 Award in 2016 — Britt believes Apprio's best days lay ahead.

A WINDING PATH HOME

When Britt was a teenager, his father left a comfortable career at Getty Oil to found his own business. When Britt graduated as a math major from Carnegie Mellon University a few years later, his future was similarly uncertain. "I had no clue what I was doing," Britt remembers.

He pursued a master's degree at the Heinz School of Public Policy and Management for one year before leaving to work full time installing computers for the Fairfax County government in Virginia.

He loved the job, but when he was passed over for a promotion — "You were on a path when you got here; you need to go and finish that path," his director explained — Britt returned to Carnegie Mellon and enrolled in the Graduate School of Industrial Administration. "I was six years from undergrad, but now I was going back not because I didn't want to work — but because I knew what I wanted to work in," Britt said.

"The GSIA education was phenomenal," Britt said. "They put students through such rigorous training that when you go into the work world, you quickly find out that relative to a lot of your peers, you're just going to put in more work. When you become a manager in corporate America, there will always be more to do than you can get done. It's about prioritizing what's important to move your organization forward, and picking your battles."

His late nights at the business school soon turned into late nights at Deloitte. Using the analytic and computer skills he honed in school, Britt developed software-based solutions to reprocess insurance claims and fix payment problems for health care clients.

After four years at Deloitte, followed by another four working in a similar capacity at CDS Technologies, Britt struck out his own, just as his father had when he was a teenager. "I wanted to build a better mousetrap," Britt remembered.

Britt's new venture — named Allegis — launched overnight: "I sold the first contract before I even incorporated the company," Britt said. On a Thursday in 1998, Britt sold a contract to install Oracle-based financial systems for a subsidiary of Sprint's international venture, Global One. By Friday, Allegis was executing the install.

His new company grew quickly, and over the next three years, Britt and his team traveled to more than 22 countries installing Oracle systems. As his business expanded, Britt knew his company needed a name that more accurately reflected what they did. The result was Apprio: "app," to reflect his company's focus on software applications, and "Rio," as in "Rio De Janeiro," to speak to its global reach.

Despite its extensive international work, Apprio remained lean until a friend of Britt's, who had just sold Oracle software to a new department at the Centers for Disease Control and Prevention (CDC), suggested Britt's company handle the installation.

The department, which stockpiled medication in preparation for a major disaster like a nuclear bomb or an

anthrax attack, became the first of many government clients for Apprio. "The intersection of health care and emergency response has been Apprio's focus to this day," Britt said.

APPRIO TODAY

Apprio's revenue in 2016 topped \$30 million, driven in part by its two largest clients: the Federal Emergency Management Agency (FEMA) and the Department of Health and Human Services (HHS).

Its work with FEMA dates back to 2004, when four hurricanes made landfall in Florida in the span of just six weeks. Apprio helped manage FEMA's temporary base of operations in Orlando, where emergency responders checked in before deploying across the state. Today, Apprio's technology helps run FEMA's Center for Domestic Preparedness in Alabama, where the nation's emergency responders train.

For the Office of the Assistant Secretary for Preparedness and Response (ASPR), a division of HHS, Apprio built and maintains the federal government's Electronic Health Records system, which has been deployed in major disasters over the past decade, including Hurricane Katrina and the Haiti earthquake.

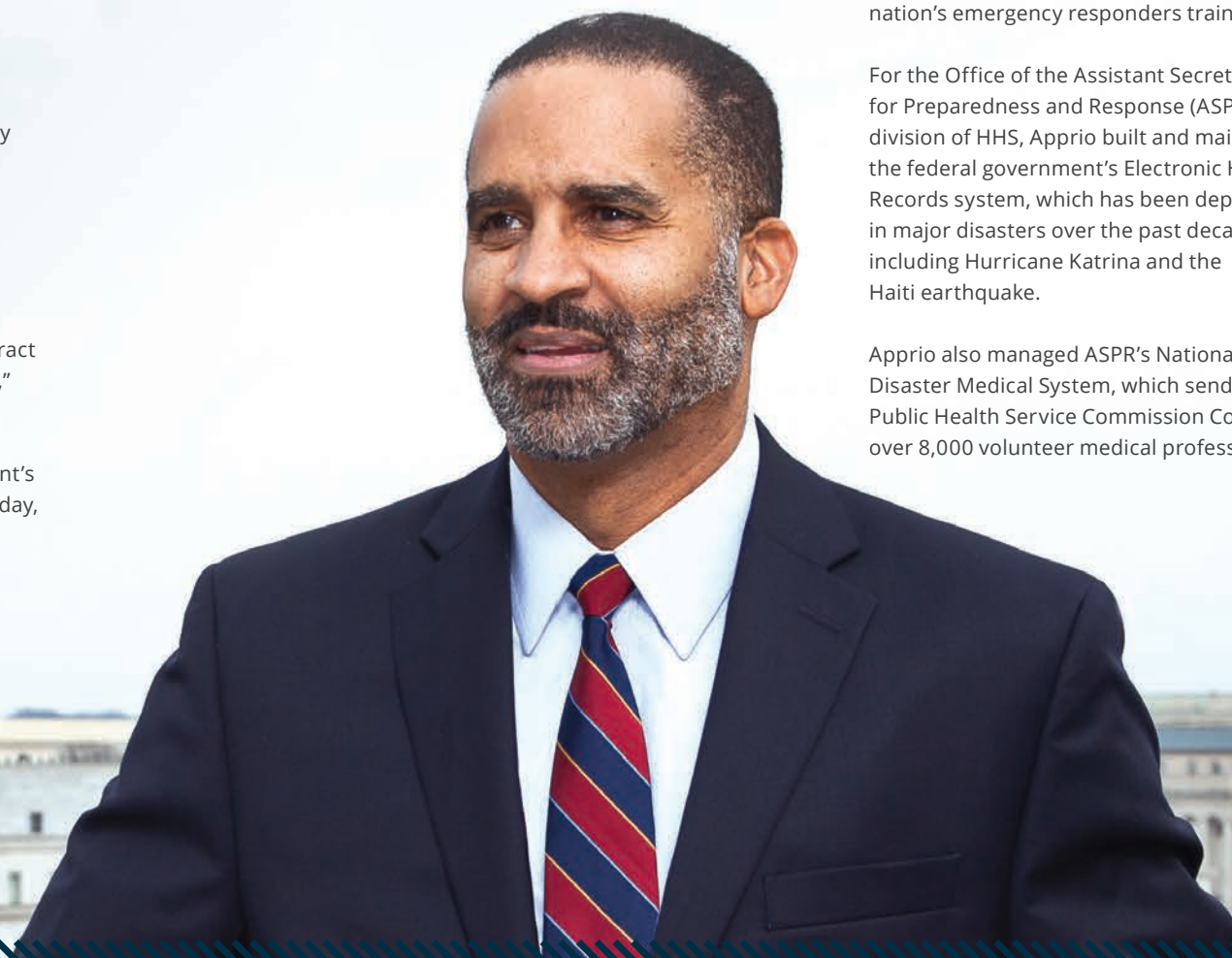
Apprio also managed ASPR's National Disaster Medical System, which sends in the Public Health Service Commission Corps — over 8,000 volunteer medical professionals

deployed after disaster strikes. Essentially the reserves for domestic medical staff, they "jump in their trucks with their sutures and needles to augment the local health care systems. A lot of people leave; somebody has to be there to run the hospitals," Britt said. Apprio's software enabled ASPR to rapidly verify medical responders' licenses and qualifications, a process known as credentialing.

The system's efficiency is crucial; when lives are at stake, every second counts.

Given that FEMA's and ASPR's budgets collectively total over \$14 billion, Apprio isn't the only game in town. What sets it apart is that it's both a management and a technology firm, Britt said. "You will find some companies just focused on either the technology or the management, but not both."

◀ "MY DAD HAD LEFT THE COMFORT OF WORKING FOR GETTY OIL AND STARTED HIS OWN BUSINESS WHEN I WAS 13 OR 14. THERE WAS NO FEAR OF JUMPING OFF THE CLIFF. I HAD IT IN MY BLOOD."





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FORWARD, AND
PICKING YOUR
BATTLES.”

Darryl Britt, MSIA '90
president and founder,
Apprio Inc.



“If your company just focuses on the technology, then as soon as it changes, it's going to cost your client a ton of money to adapt. The focus is the solution — not the technology. At Apprio, we're focused on solving business problems. That's what an Apprio professional brings to customers.”

But neither technology nor creative solutions could resolve an early limit on Apprio's growth. Britt's relentless work ethic, honed at the business school, helped grow Apprio into a formidable company, but it created a different problem: tunnel vision. “I was so hell-bent on being the best producer that I didn't have my head up looking at what was going on around me, valuing relationships and paying attention to the political environment,” Britt said. “Apprio really started growing when I started being cognizant of those things. From a purely entrepreneurial standpoint, there will come a time to stop working in the business, and start working on the business.”

THE PATH FORWARD

Britt compares Apprio's growth to a student's matriculation: “Our first 10 years,

we were in elementary school, learning the ropes. 2008 to 2012 were our middle school years; we were at 50 percent growth. The last five years, Apprio has tripled,” Britt said. “Now we go out and become adults.” How? Diversification.

“We are taking our core capabilities and expanding them to agencies that are similar to our missions,” Britt said. One growth opportunity Apprio is currently exploring is the military. “We support the government's civilian medical response, and the Department of Defense does the exact same thing. They use medical records in the field, and they do the same credentialing of doctors as we do on the domestic side.” But Britt and his team plan to do more than replicate successful past solutions. They're looking beyond the horizon, and they're particularly excited about the potential to use health information technology to track patient movement post-disaster.

In the days and weeks after Hurricane Katrina, for instance, thousands of victims were transferred to hospitals across the country to alleviate congestion. It's possible

patients from the same hometown ended up thousands of miles away from each other. If they had experienced similar symptoms due to an identical strain of bacteria, for example, doctors could have considered their symptoms collectively and coordinated treatment. But because there was no centralized electronic database to track their movement or diagnoses upon leaving the medical tent, this wasn't possible. Apprio wants to change that.

It's a perfect example of how Apprio plans to harness the power of technology to save lives. Apprio's ability to innovate — coupled with the tragic reality that disasters are a matter of “when,” not “if” — gives Britt confidence in his company's future. “Our mission is essential operations,” Britt said. “Whether they're in health care or otherwise, they don't go away. In my humble opinion, we are looking at moderate but steady growth over the next five years.” —

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BY NICHOLAS DUCASSI

A PRECISE ODYSSEY

“I WANT THE COUNTRY THAT ELIMINATED POLIO AND MAPPED THE HUMAN GENOME TO LEAD A NEW ERA OF MEDICINE ... TO BRING THE COUNTRY CLOSER TO CURING DISEASES LIKE CANCER AND DIABETES,” PROCLAIMED PRESIDENT OBAMA IN HIS 2015 STATE OF THE UNION ADDRESS. As Obama announced the launch of a new precision medicine initiative, the Capitol building erupted in applause. 27-year-old cystic fibrosis patient Bill Elder, a guest that night of First Lady Michelle Obama, listened live as the president explained the catalyst: “In some patients with cystic fibrosis,” a rare, life-threatening genetic lung disease, “this approach has reversed a disease once thought unstoppable.”

That approach is *Kalydeco*, a breakthrough treatment developed by Vertex Pharmaceuticals that targets the genetic roots of the disease, earning it the distinction from *Forbes* as “The Most Important New Drug Of 2012” and winning the First Annual Forbes Breakthrough Drug Award for “dramatically improving the lives of patients and conquering a scientific challenge that had vexed researchers for decades.”

“I’m so lucky to be a living, breathing example of how precision medicine can work,” Elder told the Cystic Fibrosis Foundation shortly after the State of the Union. “I started taking a breakthrough treatment for cystic fibrosis a few years ago, and it has changed my life. This new treatment is allowing me to pursue my dreams. Without *Kalydeco*, I know I would get sick a lot more often, but since taking the drug, I haven’t had a flare-up.”

For Tepper alumnus and current Vertex EVP and Chief Patient Officer **Amit Sachdev**, the State of the Union represented a highlight of nearly a decade of tireless work. Having helped shepherd the Boston-based company to multiple breakthrough medical treatments, ten-fold growth, and R&D sites and offices across four continents, the presidential mention further validated his decision to join Vertex when the company had just one office, no commercial operations, and no profit.

“Precision medicine,” also known as “personalized medicine,” targets a disease’s genetic roots to modify the course of a disease or even prevent it. “That’s what Vertex does,” says Sachdev. “We use different approaches — small molecules, cell therapies, gene therapies — to create innovative, transformative medicine for serious diseases.”

But the journey from research to market can be decades-long, laden with setbacks, and require serial rounds of massive financial investment. Sachdev’s odyssey from finance and data analysis classes at Carnegie Mellon to helping bring hepatitis C, cystic fibrosis, and hopefully Type 1 diabetes and sickle cell disease treatments to the world was similarly winding, carrying him over a million miles across numerous international borders with stopovers at law school, Wall Street, and Capitol Hill. Over the last two years, this has led to the creation of a new MBA track in health care at the Tepper School of Business.

“**I REALIZED PRETTY QUICKLY I WANTED TO DO SOMETHING THAT I FELT MORE PURPOSEFUL ABOUT — SOMETHING LESS ABOUT INVESTING AND MORE ABOUT PUBLIC POLICY AND HELPING IN OTHER WAYS.**”

Amit Sachdev (BSIM 1990)
EVP and Chief Patient Officer
Vertex Pharmaceuticals

NATURE MEETS NURTURE

As a child, Sachdev spent countless hours inside the science labs at Louisiana State University, where his parents conducted research as chemistry and botany professors. His genetic predisposition to scientific curiosity met a love of computers, which he nurtured in his teens when he began programming in Basic, Cobalt, and Fortran.

Drawn to Carnegie Mellon for its prowess in technology, he had two predominant career goals in mind as he chose his major: purposeful work and entrepreneurship. He decided to major in business: “Tepper’s curriculum gave me skills and capabilities that I’ve applied throughout my whole career,” says Sachdev.

After graduating, he became an investment advisor for a large Wall Street brokerage house. It was short-lived: “I realized pretty quickly I wanted to do something that I felt more purposeful about — something less about investing and more about public policy and helping in other ways.”

He pivoted from business to Emory University’s law school and soon landed an internship at the Department of Justice in Environmental Litigation and Defense. He eventually found his way to writing laws, running hearings, and negotiating bills in cybersecurity and critical infrastructure as Senior Counsel for a senior congressional committee.

Law school helped him get to Capitol Hill, but Sachdev says the business negotiation skills he learned in his undergraduate Mergers and Acquisitions class helped him excel there: “I learned how to work with other people and how to negotiate. Whether I was negotiating legislation in a bipartisan way or in a business negotiation — the skills I learned at Tepper really applied forward in my career.”

Before long, he became Deputy Commissioner of the Food and Drug Administration (FDA), which oversees nearly 25 percent of the U.S. consumer economy. The breadth and diversity of his workload from implementing key elements of the Medicare Modernization Act to ensuring the efficacy and safety of HIV

medicines sent to Africa, further sharpened his skills. “I was problem-solving from the time I walked in to the time I left,” says Sachdev. “Problem solving, data analysis, and assessing and managing risk are what I most took away from Tepper, and what I come back to every time.”

A BLOSSOMING IN BIOTECH

By 2004, a D.C. colleague called to gauge his interest in joining BIO, the life sciences trade association that represents large companies like Celgene (\$15B) and smaller venture-backed, innovative biotech companies. “I wanted to experience the private sector. I had done almost a decade in public service, which I found really meaningful, but I didn’t know which part to enter — hospitals, insurance, innovation. I thought going to BIO would give me a taste of that.”

At BIO, Sachdev met Joshua Boger, a doctor of organic chemistry who founded Vertex in 1989 to pioneer work in structure-based drug design to treat serious diseases. By 2007, nearly twenty years into its existence, the company had no commercial wing and no profit. It had devoted all of its resources to its founding mission. But it was on the verge of making history.

Its antiviral treatment for hepatitis C, a disease that killed more U.S. citizens in 2007 than HIV, was in clinical trials. Using a technique called protease-inhibition, Vertex’s treatment, called *Incivek*, showed promise to stop the replication of the virus that caused the disease. “If we succeeded, it would essentially be a cure. You would treat each patient once, and you would move on,” says Sachdev.

But bringing that dream to fruition would require help from someone with vast experience in multiple sectors, including business, government, and policy — someone like Sachdev. The opportunity to simultaneously do good and help shape a company was the perfect marriage of the career goals that pushed him to study at Tepper.

Sachdev came on as Vertex’s SVP of Corporate Affairs and Public Policy. He led its market shaping, including raising awareness of hepatitis C and increasing the

number of patients who were diagnosed. Within two years, Sachdev also led the opening of Vertex’s first ex-U.S. offices, including its commercial operations, sales, and marketing, in Canada.

But as *Incivek* advanced through clinical trials and awareness of hepatitis C increased, so did the pressure on Vertex. “Leading up to *Incivek*’s approval, we had raised \$4.5 billion in public markets without generating a return for our shareholders. It took us four years of working with the government, philanthropy, foundation, and peer companies to set up a framework to enable the funding for treatment.”

After 15 years of development, *Incivek* hit the market in 2011, and by 2012, for the first time in its 23-year history, Vertex was profitable. “It was the fastest drug in the industry to reach a billion dollars in revenue,” says Sachdev.

It didn’t last. “It was also the fastest drug off the market. Within two years, it was replaced by a competitive product. After Vertex went through a major investment over many years to be the pioneer in hepatitis C treatment — to not win in the strategy game of making sure you didn’t just have the first treatment, but also the best ... was tough.”

THE VERTEX VORTEX

“We had to pivot to a different disease area. We had cystic fibrosis in mind, but the research was in an earlier stage, so we had to figure out how to stay alive through the ‘divot’ period.”

While rare — only around 35,000 Americans are affected — cystic fibrosis is brutal to those it afflicts: The life-threatening genetic disease causes persistent lung infections and limits the ability to breathe over time. Vertex’s personalized treatment, known as *Kalydeco*, was the first medicine to treat the underlying cause of the disease.

Kalydeco exceeded expectations in its clinical trials. “We were surprised. Not only could you get a modification in the slope of the decline in lung function,” recalls Sachdev, “we also began to see improvement in lung function as well.”

While it was initially approved to treat around 4 percent of CF patients, Vertex has continued to develop *Kalydeco* since its 2012 introduction to bring it to more eligible patients around the globe, including its 2020 approval to treat babies as young as 4 months old. Today, Vertex has four approved medicines that have the potential to treat up to 90 percent of CF patients in the future. “We’re not done; there’s still 10 percent of patients that probably need some sort of gene therapy or cell therapy that we’re working on,” cautions Sachdev. “But we feel good about what we’ve done.”

A DEEP COMMITMENT TO ITS PATIENTS

But Vertex’s and its Chief Patient Officer’s missions have always been about more than just treating the disease: “We’re deeply committed to the patients we serve, and our responsibility goes beyond medicine. We spend a lot of time thinking about what kind of outcomes patients have in terms of quality of life and how we can engage with them to ensure we’re meeting their needs to make sure their voice is heard.”

That work also includes philanthropy — Sachdev oversees The Vertex Foundation — to running programs that help patients connect directly with the company. “We have patients who show up on their vacations and want to come meet our scientists,” so Sachdev built a program that allows patients to tour Vertex’s Boston labs, not unlike how Sachdev himself toured his parents’ labs when he was a child.

Sachdev says he’s gained an extended family in the CF community. “When you have a rare disease, it’s a very small number of people, unlike the larger systemic diseases that affect large swaths of the population. I know them by name, know their family members, know their communities ... that’s a privilege that we have doing this work.”

On the horizon, Vertex has therapies in various stages of research and development, including potential treatments for Type 1 diabetes, beta thalassemia, and sickle cell disease. Issues are sure to arise as they work to introduce them to the world, but Sachdev says his journey has equipped him to tackle any hiccups: “My career path — and it was definitely a winding road, just gave me

exposure to different types of problems and risks, but I still apply the same set of skills I learned at Tepper to develop solutions to those problems.”

And while Sachdev is working on bringing those medical therapies to the greater population, he’s also working hard on bringing a special segment of the population to Vertex: Tepper alumni. “We have as much need, want, and capability in innovative life sciences as the Silicon Valley companies or Wall Street banks for those with analytical capabilities, data scientists, and the other skills that make Tepper graduates so special.”

To that end, he’s worked closely with Tepper faculty and staff, including former Dean **Robert Dammon**, to design and develop a new MBA Health Care track in data analytics that will include artificial intelligence for life sciences.

The partnership between the Tepper School of Business Health Care Initiative and Vertex will create an MBA curriculum for health care analytics and support the related research of the faculty and doctoral students.

“Our vision is to offer a comprehensive deep dive into the study of health care analytics,” says **Soo-Haeng Cho**, Professor of Operations Management and Strategy at Tepper. The curriculum will draw from Tepper School’s health care analytics courses and related courses in health care policies and AI applications to health care from the Heinz School and the School of Computer Science. Touching on everything from hospital management, insurance policies, and patient records to medicine, diagnoses, and treatment, the track will culminate in a capstone project course that exposes students to a real business problem in the health care and life science industry. “The potential is limitless,” says Professor Cho.

While the program is currently in development — like a cutting-edge personalized medicine in a clinical trial — the fall 2020 semester featured the first-ever Health Care concentration to build up momentum and excitement for the track. “There’s no reason we shouldn’t connect these dots and help recruit more Tepper graduates to life sciences,” says Sachdev. —

“TEPPER’S CURRICULUM GAVE ME SKILLS AND CAPABILITIES THAT I’VE APPLIED THROUGHOUT MY WHOLE CAREER.”





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NEAL RAJDEV (MBA 2009)

BY NICK DUCASSI

GROWTH

Neal Rajdev had never heard of the “AgTech” sector before his former client David Perry reached out to him with a proposal in 2015. That’s because the “AgTech sector” — shorthand to describe companies that harness technology for use in agriculture — was nascent and undergoing significant change with the applications of modern technology.

Fast-forward just five years, and AgTech is now a \$17 billion industry that counts Rajdev, Senior Vice President of Corporate Development for industry pioneer Indigo, among its greatest innovators. This year, CNBC named Indigo the world’s most innovative company — a spot held previously by SpaceX, Airbnb, and Uber — and Forbes named Indigo one of “The 25 Most Innovative AgTech Startups in 2018.”

Rajdev (MBA 2009) shepherded the company’s growth from zero clients and 15 employees working out of a former Polaroid laboratory in Boston to a multibillion-dollar valuation, with over 10,000 customers and more than a thousand employees across the globe. Like a well-watered crop, Indigo and Rajdev have no plans to stop until the company meets its goal: to harness nature to help farmers sustainably feed the planet. Just five years in, Indigo has raised over \$650 million in capital and aspires to transform the modern agricultural system.

A VISION OF A HEALTHY PLANET

Indigo’s central tenet and aspirations can be expressed in just 10 words: “What if a healthier planet began with a healthier farm?” It’s a question Indigo answers by using technology to revolutionize the agriculture industry. From Indigo Marketplace, a digital platform that connects growers and buyers, to Indigo Transport — think Uber for grain transportation — to Indigo Research Partners, the world’s largest agriculture lab, Indigo’s businesses are far-reaching and complex. Indigo’s goals are similarly ambitious: transform how food gets from growers’ farms to your table, increase the profitability of global farmers all over the world, and combat climate change by capturing and storing a trillion tons of atmospheric carbon dioxide in agricultural soils.

Like most big ideas, it began with a small one: Around 2015, Indigo’s CEO, David Perry — a successful entrepreneur with three multibillion-dollar companies in his rearview mirror — and his researchers developed a way to use technology to coat seeds in natural microbes that could improve crop yields and protect against environmental stress. Indigo’s microbial technology allows for food and fiber production that requires less water and less synthetic fertilizer. Using Indigo’s microbes, farmers can simultaneously and sustainably improve crop health and productivity.

Perry put a call in to Rajdev, whom he had met several years prior. Though Rajdev didn’t have any specific agriculture experience, he had helped dozens of clients in multiple sectors transition through growth phases including initial public offerings, merger and acquisition transactions, and other equity and debt financings. That resume included Rajdev’s time at Citigroup, where the two met in 2010 when Rajdev helped Perry take his health care company public. “It was an extremely challenging public offering, but it ended up being successful. The company was later sold to Pfizer for over \$5 billion. We realized we should continue to work together,” recalls Rajdev.

Once Perry explained Indigo’s breakthrough, Rajdev immediately recognized the opportunity: “We wanted to be the leader and the pioneer. There was no way we could live with second place given the size of the opportunity.”



QUARTERBACKING TOWARD GROWTH

Rajdev jumped on board and got to work — a six-month sprint of hundred-hour weeks that involved weekly red-eye flights from his San Francisco home to Indigo's Boston headquarters. Above all, Indigo needed basic infrastructure. "We needed to set some goals, find a new office space, and write a business plan." Rajdev says that while he was new to agriculture, his analytical background — honed at Tepper — was invaluable in its flexibility. "I had developed analytical and quantitative skills over time. I just had to figure out how to apply that background to general business problems."

Once Indigo's business plan was in place, it was time to finance and capitalize, drawing upon the general finance education Rajdev gained at Tepper and honed in his investment banking career.

Rajdev was charged with raising Indigo's first \$25 million, and while the enormity of the business opportunity for investors was clear to him, one of Indigo's main early challenges was simply explaining what sector Indigo was working in. "Back then, there wasn't a thriving AgTech ecosystem," remembers Rajdev. "We spent a lot of time explaining what it is to be a tech company within agriculture, and educating banks, partners, and suppliers — every single constituent." Rajdev exceeded his target by raising over \$31 million in Indigo's B round. Today, Indigo boasts over \$650 million of total investment. "My finance education ended up being the most important thing in getting me to where I am today," says Rajdev.

Rajdev achieved each of these very complex goals by way of what he calls "quarterbacking." It's been the fundamental skill he's brought to the offices of each of his corporate stops — from working in business analytics in industrial automation to health care investment banking to agriculture. "Everything can be broken down into a step-by-step plan. Of course, nothing really goes according to plan, but you can't be successful without having a plan."

Part of what makes the company so revolutionary is that its profits are tied to its farmers' profits. "We work directly with growers in a partnership capacity. We say, 'Let's work together. You tell us what's valuable. Let's build that future together.'" Like a crop treated with Indigo microbes, their strategy yields several positives: Because Indigo is developing its strategy and new technology directly in response to growers' needs, the company can constantly innovate. "We envision what the future will be, and then we build that," explains Rajdev.

INITIATIVES WITH IMPACT

"At Tepper, I learned to be methodical and analytical about planning things, and I apply that today." Rajdev is still a quarterback, but as the company has launched initiatives like Indigo Marketplace, his challenges leading corporate development have changed as well. "The good news is we don't have to invent new business models. We have existing businesses that are generating significant revenue, and we have a clear view of what these businesses can be and the profound impact they can make. Now it's about scaling them and executing really well at the same time." —

"I HAD DEVELOPED ANALYTICAL AND QUANTITATIVE SKILLS OVER TIME. I JUST HAD TO FIGURE OUT HOW TO APPLY THAT BACKGROUND TO GENERAL BUSINESS PROBLEMS."

"WE WANTED TO BE THE LEADER AND THE PIONEER. THERE WAS NO WAY WE COULD LIVE WITH SECOND PLACE GIVEN THE SIZE OF THE OPPORTUNITY."





AHEAD OF ITS TIME

WHEN IT COMES TO DATA, FEW SEE THE FOREST FOR THE TREES THE WAY ALFRED KUEHN, E '52, PH.D. '58, DOES. KUEHN WAS ANALYZING DETAILED DATA ON STEEL SHIPMENTS AND CONSUMER PURCHASE BEHAVIOR AND DEVELOPING MARKET PROJECTIONS — AND HELPING BUSINESSES HARNESS IT — LONG BEFORE “BIG DATA” BECAME A BUZZWORD.



The founder of Management Science Associates Inc. (MSA), one of the world's premier data and market analysis research firms, Kuehn helped transform how companies run their businesses. He founded MSA — then known as Market Science Associates Inc. — in a small office at the business school (then GSIA) and in a student's cellar. Today MSA has 900 employees and contractors working in the U.S., Asia and the U.K.

A pioneer in applying analytical methods to study consumer behavior and dynamic marketing processes, Kuehn was one of the founders of the disruptive concept of “management science,” a quantitative approach to decision-making and business analytics that now forms the foundation of a Tepper School of Business education.

FROM OIL TO DETERGENT

The son of Austrian and German immigrants, Kuehn was born and raised near steel smokestacks in North Braddock, Pennsylvania. His father, a tool and die maker, often invited young engineers to his house to work on their problems or patent applications. “My mother told me they ‘got it made,’” Kuehn remembered. “They were all grads from Carnegie Tech.”

Few of his school classmates went directly to college, but Kuehn carried newspapers and saved for years to become a chemical engineering major in 1948 at the Carnegie Institute of Technology, now Carnegie Mellon University. His study of hydrocarbons helped him get a summer pilot plant research job at Gulf Oil research and development, where he identified operational changes to improve its end product. He continued working with Gulf Oil through his undergraduate career.

Kuehn made a connection with the business school's founding dean, George Leland Bach, who encouraged Kuehn to pursue business education. During the second year of his master's program, Kuehn took a Ph.D. course with Herbert Simon, Nobel laureate and founding GSIA faculty member. Part of the course included modeling behavior. Kuehn was intrigued by consumer brand-choice marketing behavior, which he saw as being a continuous flow over time impacted by

advertising, promotions, price and other factors — analogous to the way crude oil is impacted by heat, pressure and mixing within a refinery.

“We were then pioneering and introducing operations research and numerical methods,” Simon told the Pittsburgh Business Journal. “He got fascinated by that. The thing he could do best was not provide people with marketing information by being a pollster but by having sophisticated ways of analyzing the data.”

Kuehn's consumer behavior modeling generated interest at Lever Brothers — a Unilever subsidiary — and its data suppliers, MRCA and the Chicago Tribune. He developed a simulation of the detergent

Cooper had become aware of the model and had recommended that it be developed as the Carnegie Tech Management Game, which would differentiate GSIA from business schools whose models did not provide students with the opportunity to test their skills analyzing data from realistic detailed models of actual consumer products.

“GSIA was trying to bring analytics into management courses,” Kuehn remembered. “Case studies in marketing were always about the past, but the world keeps changing. You don't want to learn how to solve last year's problems — you want to learn how to solve current and next year's problems.”

“MSA WAS GEEK CHIC FROM THE BEGINNING, LONG BEFORE IT BECAME FASHIONABLE.”

market and later developed his Ph.D. thesis on a similar analysis of frozen orange juice, incorporating how elements like product characteristics, price and advertising would influence consumer behavior, brand switching and repeat buying. This was the first — and a highly sophisticated — marketing mix/attribution model, although not so named at the time.

MANAGEMENT GAME

Kuehn's detergent model was a hit not just at Lever Brothers, which had several uses, including as an executive training tool for marketing managers, but also at the business school. Former faculty member William

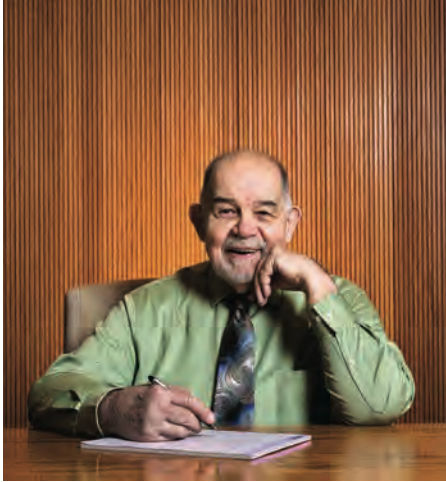
Kuehn noted that Lever Brothers used the marketing version of Management Game to explain how different consumer tests (repeat vs. single tests) provided different levels of confidence regarding consumer preferences. The game was perfect as a teaching tool for that purpose. It also provided students with an opportunity to learn analysis that would support decisions and the interactive nature of marketing factors.

“When our business school was created, every business program in the world was teaching business more as an art, and using case studies as a primary tool,” **DAVE LELAND LAMONT**, associate



teaching professor, explained. “The philosophy here was fundamentally different. We emphasized a quantitative evidence-based approach to making business decisions, as opposed to an intuitive one. It was a fundamental shift in the way that business education was taught. AI was a part of that. All of the business programs in the world started moving in that direction.”

“ONE OF THE THINGS I THINK IS REALLY UNIQUE ABOUT MSA: I DON’T KNOW ANY OTHER ORGANIZATION THAT HANDLES ALL COMPANIES IN AN INDUSTRY.”

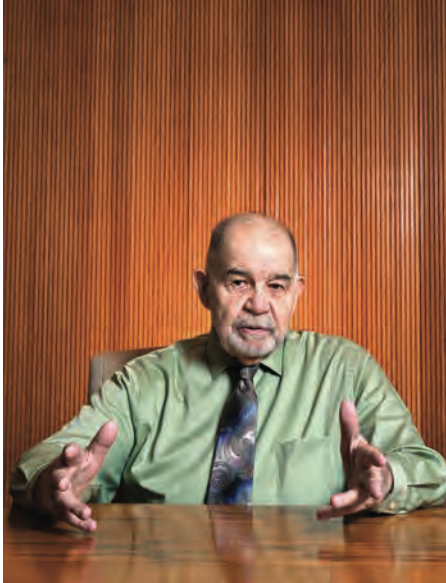


Today, some form of GSIA’s original academic model — appropriately referred to as “management science” — is taught at every leading business school. “The difference is that management science tries to take a more proactive perspective and a more quantitative perspective,” said **WILLEM-JAN VAN HOEVE**, Carnegie Bosch Associate Professor of Operations Research, who serves as the faculty head for the new Master of Science in Business Analytics and coordinator of the business analytics track in the MBA program at the Tepper School. “The quantitative approach allows you to objectively measure the impact of certain decisions, and then act accordingly.”

BUSINESS CONTINUITY

As part of a landmark \$246 billion settlement between six big tobacco companies and 46 states’ attorneys general, MSA’s technology has been used to determine the annual amount each tobacco company pays, and how much each state receives, for the past 20 years. Kuehn says many individuals in the industry over the years expressed surprise that no one ever challenged the accuracy of MSA systems or work MSA has done during those years. Kuehn hopes the care that MSA has given to developing and maintaining that system, which served the tobacco industry and states so well, may enable it to perhaps also provide similar benefits to states now trying to develop appropriate rules and procedures for such diverse industries as medical cannabis, casinos and internet gaming.

When a firm like MSA handles confidential data for every competitor in an industry, data security becomes paramount. “A tremendous amount of care and some redundancy are required to handle, store and analyze

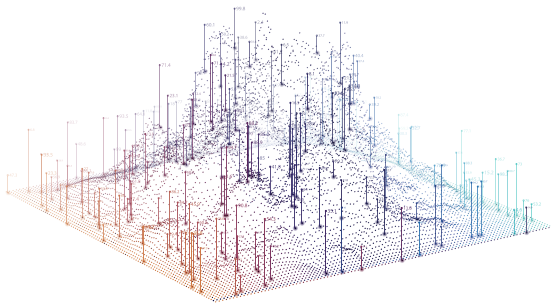



such confidential information,” Kuehn said. When MSA first found itself working with participating companies in the same industry, a significant amount of distrust existed. Companies were willing to guarantee accuracy of their information but wanted significant checks built in the system to check on others.

To store, retrieve and analyze that sensitive information, MSA operates several secure data centers in southwestern Pennsylvania connected by a closed fiber-optic redundant network managed completely by MSA. These data centers include a sprawling state-of-the-art facility at RockPointe in Tarentum, a newer facility in Ross Township, and a third facility at MSA’s headquarters in Pittsburgh, which MSA built in 1987 when it set out to build what MSA’s clients considered to be state-of-the-art. The three facilities have personnel available 24 hours per day for 365 days a year.

“Few companies define ‘business continuity’ like MSA, where our goal is to never have our top service ever go down,” Kuehn said. “Data centers often provide assurance that systems won’t be down for more than a specified short period and that clients won’t lose what is needed to recover from a disaster. Some of our clients are surprised every five years at renewal time to learn their systems have not failed or perhaps even shut down for maintenance. We may have the most secure system for protecting data. We’re not merely lucky that we haven’t gone down; we developed technology to try to assure we can handle it.”

“WE HAVE MANY CLIENTS WHO SAY THEY HAVE NO PROBLEM FINDING SOMEONE THAT WILL DO WHAT WE DID FOR THEM LAST YEAR. WHAT THEY’RE INTERESTED IN IS WHAT WE DO THIS YEAR.”



Kuehn said MSA’s mission is to help companies enhance their capabilities and effectiveness through data analysis. “People must be incentivized to continue to improve capabilities,” Kuehn said. “Continuing growth is needed to compensate for unexpected business losses. Innovation has been key to enable MSA to continue growing, and we must constantly create better information that is more relevant for today’s marketplace. MSA’s continuing innovations for its Industry Services have led clients to say that they want to maintain our working relationships because we’re likely to come up with something new and significant each year.” That’s the approach that has kept MSA at the forefront of analytics and informatics decades after its inception in Kuehn’s GSIA office. — 

MANAGEMENT GAME AT GSIA

From 1960 to 1995, thousands of business school students played a Management Game. An evolution of the mathematical model **ALFRED KUEHN**, E’52, Ph.D. ’58, developed for Lever Brothers, Management Game was the first in the world to use real-world data. As the only capstone to the master’s program for 35 years, its goal was to help students connect the dots between things like financing, accounting, advertising and production as they ran a business.

“It was a fabulous learning opportunity for the students — it forced you to think like an owner,” said **DAVE LELAND LAMONT**, associate teaching professor and the current director of Management Game, who played it as a student.

Three teams of students competed against each other in a simulation of the detergent industry. They represented the three largest companies in the industry in 1960: Lever Brothers (now Unilever), Proctor & Gamble, and Colgate (now Colgate-Palmolive).

From meeting multiple times with their board of directors (played by alumni) to making hundreds of decisions about things like product characteristics, advertising, pricing and distribution, the teams played out three years in the business over the course of one semester.

In terms of product characteristics, for instance, teams could create a detergent with varying degrees of gentleness, cleaning power and sudsiness by mixing seven different ingredients. “All of the seven components had different lead times and shipping cost as well,” Lamont said.

“It was way ahead of its time,” Kuehn remembered. “It had you make real business decisions.” He also made every employee at MSA, including its executives, play the game.

In 1996, the game was altered to make the simulation more strategic and international, but the original game lives on in the minds and hearts of those who played for over three decades. “Kuehn’s model was 50 years ahead of its time,” and business analytics has only grown in importance, Lamont said. “If anything, MSA’s work has become even more valuable and relevant.”



LIFETIME OF IMPACT

SERVICE LEADERSHIP HIGHLIGHTS A TEPPER SCHOOL ALUMNUS OR ALUMNA WHO IS USING THEIR BUSINESS ACUMEN TO ACHIEVE SUCCESS IN THEIR ALTRUISTIC PURSUITS.

The low hum of conversation fills the air at an elite fundraiser for New Hampshire senator Jeanne Shaheen. It's 2008, and serially successful entrepreneur and CMU alumnus **GEORGE BENNETT**, (Ph.D. 1971) only months removed from the \$775 million sale of his health care services company HealthDialog, is making the rounds. He's no stranger to fundraisers — after a career of founding and consulting for lucrative businesses, he's shared the fruits of his success with numerous charities, organizations, and candidates. But when Jeanne Shaheen's adult daughter Stefany introduces herself to him, she's not seeking a donation to her mother's campaign — she's seeking his business advice.

Stefany Shaheen's young daughter had recently been diagnosed with Type 1 (juvenile) diabetes. Her daughter's strict nutrition regimen now required Shaheen and her husband to spend considerable time each day measuring their daughter's portion sizes. Her company, called Good Measures, would sell kitchenware products with integrated measurements to help those newly diagnosed with diabetes manage their nutrient intake.

Bennett himself had recently been diagnosed with a nutrition-sensitive condition, and he quickly learned how much effort managing his own nutrient intake required. He had tried several types of software programs to assist him but found them all to be cumbersome and difficult to use.

Before long, they founded Good Measures, a company that uses technology to help those contending with chronic conditions like diabetes, heart disease, and obesity manage their nutrition, exercise, and overall health

regimens. Bennett believes it could not only change how the health of chronically ill patients is managed — it could change how the world eats.

GETTING A LEG UP

For Bennett, it was just the latest in a lifetime of giving deserving individuals and organizations a leg up — an effort sparked by the first leg up Bennett himself received. While studying engineering as an undergraduate at West Virginia University, Bennett took an internship at IBM. He spent a summer developing a computer language for IBM's first graphical cathode-ray tube terminal. Unbeknownst to him, IBM had already employed a team of 140 for a year to do the same thing without success. Working solo, Bennett created a computer language by the end of the summer that would later be released with IBM's first commercially released graphical cathode-ray tube.

Word of his feat spread quickly, and before summer was out, **WILLIAM DILL** (Ph.D. 1956), then a Vice President at IBM, but previously a faculty member with the business program at the Carnegie Institute of Technology — now CMU — paid the young prodigy a visit. He said, "This is amazing. Where are you going to graduate school?" Bennett wasn't planning on graduate school — he couldn't afford it.

Dill would have none of it. Over the next year, Dill helped Bennett navigate the Graduate School of Industrial Administration's various entrance applications, paperwork, and tests. This assistance culminated in the offer of a lifetime: an all-expenses-paid, five-year fellowship that would include a master's and Ph.D. in industrial administration.

Bennett describes his time at GSIA as transformative. "I learned the value of interdisciplinary thinking and the power of pushing the frontiers of current wisdom," he said. "I remember seeing Richard Cyert — the dean at the time — on the cover of Businessweek with a flattering caption that read something like, 'Richard Cyert: The Leader of an Elite Brain Trust.'"

“I WANT MY TOMBSTONE TO SAY 'HE HELPED PUT A DENT IN THE SCOURGE OF DIABETES.'”

While at GSIA, Bennett enjoyed the opportunity to interact with faculty who were producing groundbreaking work: Cyert and James March, whose work forms the foundation of organizational behavior studies; Nobel laureate Herb Simon; Yuji Ijiri, the inventor of triple-entry accounting; and William Cooper, who led the application of linear programming to management settings. “I am very grateful for the skills I learned from these faculty members and others at the school,” Bennett said, “but the biggest impact on my life and career has been what they taught me about the value of pushing boundaries and routinely thinking out of the box.”

LIFETIME OF GIVING
Dill’s kindness would set Bennett on a path of lifelong service and philanthropy. “I have spent my career trying to pay back Bill Dill’s act of goodwill,” Bennett says. From serving on the boards of organizations like the National Youth Science Foundation and the Grace Commission to supporting nonprofits that help underprivileged youth attend college, Bennett has been generous with both his time and the wealth of resources he’s acquired throughout his successful career.

His skills in business and entrepreneurship are extensive. Bennett consulted for Boston Consulting Group; co-founded Bain Consulting; co-founded Braxton Associates, which he and his colleagues sold to Deloitte; co-founded Symmetrix, a re-engineering consulting firm; and co-founded Health Dialog, a company that provides telephonic support to chronically ill patients. “Suffice it to say, my Ph.D. from Carnegie Tech provided an incredible ROI,” Bennett jokes.

At Health Dialog, to streamline operations, Bennett and his colleagues implemented “whole person” coaching. Rather than have numerous clinicians on staff handle a patient’s multiple conditions, Bennett explains, “my colleagues and I had the bold idea of having one coach be responsible for understanding the full constellation of a person’s needs, including his or her various medical conditions. That one idea revolutionized the telephonic support business.” Bennett realized that if the health care industry as a whole took the same approach to patient care, it could similarly rein in costs and battle health care overutilization.

By the time Bennett and his partners sold Health Dialog in 2008 for \$775 million, 24 million people had access to the service, and the firm had nearly 2,000 employees. It is now a wholly owned subsidiary of Rite Aid.

PERSONALIZED WELLNESS MANAGEMENT
When Shaheen approached him that night in 2008, Bennett realized he could expand on the work he began with Health Dialog. With effective virtual coaching using phone, text, and/or email, and with effective digital assets including an online portal and software app, Good Measures could help chronically ill patients manage their nutrition and health regimens.

Each Good Measures patient is assigned a clinically trained coach, such as a registered dietitian or certified diabetes educator. Together, they develop a nutrition and exercise regimen that takes into account many interconnected personal factors, including age, gender, goals, medical conditions, food preferences, schedule, budget, allergies, and medications, among others. Then, using its patented technology called the “Good Measures Index,” it makes specific recommendations about what foods will help satisfy their nutrient needs.

Whether patients are trying to adhere to certain diets or trying to manage chronic conditions, Good Measures gives them personalized meal and snack suggestions that meet their highly personalized nutrient needs. “Before Good Measures, no one had ever developed an easy way to keep 40 nutrients in balance. It’s a complicated puzzle. Luckily, I learned how to solve complicated puzzles at Carnegie Tech.”

Good Measures is currently in discussion with several global partners interested in deploying its technology to help chronically ill patients and to help consumers build meal plans and create shopping lists. The Boston-based company counts 29 founding members, including mathematicians, engineers, and food and nutrition experts, and employs full- or part-time staff in all 50 states. Bennett himself has never taken a salary.

BROAD PHILANTHROPIC SUPPORT
Bennett’s dedication to the fight against diabetes goes far beyond business. “When we launched our company,” Shaheen recalls, “he immediately became passionate about supporting organizations that were making an impact on the lives of those that we were serving, like the Joslin Diabetes Center and the Juvenile Diabetes Research Foundation.”

Bennett says, “The Good Measures approach could literally help hundreds of millions of people worldwide.” Diabetes statistics alone are sobering: In the United States, 30 million people are diabetic, and 86 million more are at risk of contracting diabetes — representing one-third of the entire U.S. population.

“Average annual medical costs for an adult living with diabetes can be two or three times higher than the average medical costs of most adults,” Bennett says. “As those individuals move onto Medicare, we’re heading toward a huge crisis. Good Measures can help slow that down.” And since Good Measures can also help healthy patients as well as those with conditions like heart disease or high cholesterol, it could help rein in costs across the health care industry.

Most importantly, though, Bennett believes Good Measures could save lives. Bennett jokes, “I want my tombstone to say, ‘He helped put a dent in the scourge of diabetes.’” —

“IT’S A COMPLICATED PUZZLE. LUCKILY, I LEARNED HOW TO SOLVE COMPLICATED PUZZLES AT CARNEGIE TECH.”

“THE GOOD MEASURES APPROACH COULD LITERALLY HELP HUNDREDS OF MILLIONS OF PEOPLE WORLDWIDE.”



George Bennett (Ph.D. 1971)
Chairman and CEO
Good Measures