

DESIGN BASICS

Openings



A VIEW of the MONUMENTS.

IN order to take this solemn Survey, it is necessary we should enter in at the Door of the South-Croft, as being most convenient for the better disposing the Places; where the first Tomb you come at is a rough one, of coarse Marble, and looks, by the Moisture and Injury of the Weather, and the Nature of the Stone, much older than it is. This, whose Form is here exhibited, together with its Inscription, was erected to the Memory of Mr. Edmund Spenser, a Man of great Learning, and such a luxuriant Fancy, that his Works abound with as great Variety of Images (and curious, tho' small Paintings) as either our own or any Language can afford in any Author. He dy'd, as you see by the Inscription, in the Year 1596. By what Mr. Camden and others say of this Monument, the Original was in Latin; which take in Camden's Words, as follows:

Edmundus Spenser Londinensis Anglicorum poetarum, nostri seculi facile Princeps, quod ejus poemata feceruntis mira & villis genio conscripta comprobant. Obiit innotuita morte, anno salutis 1596. Et prope Galfredum Chaucerum conditur, qui felicissime Dignus Angliis literis princeps illustravit, in quam hoc scripta sunt Epitaphium:

*His prope Chaucerum finis est Spensericus illi
Proximus ingenio, proximus & tumulo.
His prope Chaucerum Spensere poeta positus,
Candoris & veris quam tumulo proprius,
Anglica te vita, vixit plausaque poëti,
Nunc meritis times te moriente mori.*

In English thus:

¹ EDMUND SPENSER, born in London, and chief Poet of our Age; which his Works, written with a happy Spirit, and masterly Genius, testify. He died by a too early Death in the Year 1596, and lies buried near Chaucer, who was the first that successfully wrote Poetry in the English Language, over whom are written these Epitaphs:

Here

A VIEW OF THE MONUMENTS. Book page, eighteenth century.

The University's Crisis of Purpose

This is the fifth in a series of essays exploring dominant themes and currents of thought in particular areas of American life. The next essay in the series, which will continue in this space over the coming months, is scheduled to appear Sept. 20. An archive can be found at nytimes.com/crossroads.



THE world economic crisis and the election of Barack Obama will change the future of higher education. Even as universities, both public and private, face unanticipated financial constraints, the president has called on them to assist in solving problems from health care delivery to climate change to economic recovery.

American universities have long struggled to meet almost irreconcilable demands: to be practical as well as transcendent; to assist immediate national needs and to pursue knowledge for its own sake; to both add value and question values. And in the past decade and a half, such conflicting and unbounded expectations have yielded a wave of criticism on issues ranging from the cost of college to universities' intellectual quality to their supposed decline into

leftist political correctness. A steady stream of books — among them “Declining by Degrees: Higher Education at Risk” (also a PBS special), edited by Richard H. Hersh and John Merrow; Anthony T. Kronman’s “Education’s End: Why Our Colleges and Universities Have Given Up on the Meaning of Life”; and Dinesh D’Souza’s “Liberal Education: The Politics of Race and Sex on Campus” — have delineated what various authors have seen as the failings of higher education.

At the same time, American colleges and universities have remained the envy of the world. A 2005 international ranking included 17 American educational institutions in the top 20, and a recent survey of American citizens revealed that 93 percent of respondents considered our universities one of the country’s “most valuable resources.”

Such a widespread perception of the value of universities derives in no small part from very pragmatic realities: a college education yields significant rewards. The median earnings for individuals with a B.A. are 74 percent higher than for workers who possess only a high school diploma.

In some respects, this is not new. Education has been central to the American Dream since the time of the nation’s founding. But in the years since World War II, it was higher education, not just instruction at the elementary or high school levels, that emerged as necessary for a technologically skilled work force as well as fundamental to cherished values of opportunity. As late as the 1930s, enrollments in the United States stood below 3 percent of the college-age population. They rose to about 15 percent by 1940, in part as a result of the G.I. Bill. They have now reached nearly 80 percent. The United States has pioneered a new postwar era of mass college attendance that has become global in reach.

But today, for all its importance to individual and social prosperity, higher education threatens to become less broadly available. By the end of the 20th century, as Claudia Goldin and Lawrence F. Katz document in “The Race Between Education and Technology,” the rate of increase in educational attainment had significantly slowed, and the United States had fallen behind a number of other nations in the percentage of its youth attending college. Goldin and Katz demonstrate how this slowdown is creating a work force with inadequate technological abilities, as well as contributing to rising levels of educational inequality.

Escalating college costs have played a significant role in this slowdown, even as universities have substantially expanded their programs of financial aid. So, too, have declining levels of government support.

After World War II, the country witnessed the establishment of a new partnership

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between Washington and the nation’s institutions of higher learning, with the federal government investing in universities as the primary locus for the nation’s scientific research. This model now faces significant challenges. Steep federal deficits will combine with diminished university resources to intensify what a 2007 report by the National Academies declared to be a “gathering storm,” one that threatened the future of scientific education and research in America. The Obama administration has set a goal of devoting more than 3 percent of gross domestic product to research. One hopes this highly ambitious aspiration can become a reality.

The economic downturn has had what in perhaps an even more worrisome impact, it has reinforced America’s deep-seated notion that a college degree serves largely instrumental purposes. The federal government’s first effort to support higher education, the Morrill Act of 1862, which established land grant colleges, was intended to advance the “practical education of the industrial classes.” A Department of Education report from 2006, “A Test of Leadership: Charting the Future of Higher Education,” concentrated on creating a competitive American work force and advancing “our collective prosperity.” But even as we as a nation have embraced education as critical to economic growth and opportunity, we should remember that colleges and universities are about a great deal more than measurable utility. Unlike perhaps any other institutions in the world, they embrace the long view and nurture the kind of critical perspectives that look far beyond the present.

Higher education is not about results in the next quarter but about discoveries that may take — and last — decades or even centuries. Neither the abiding questions of humanistic inquiry nor the winding path of scientific research that leads ultimately to innovation and discovery can be neatly fitted within a predictable budget and timetable.

In an assessment of the condition of higher education in the Anglo-American world, “Heterocriticism, Ideas, and Democracy,” George F. Will, a former dean at York University in Toronto, deplores the growing dominance of economic justifications for universities. They conflict, he argues, “with other parts of the university’s mission, with . . . narratives of liberal learning, disinterested scholarship and social citizenship.” University leaders, he observes, have embraced a market model of university purpose to justify themselves to the society that supports them with philanthropy and tax dollars. Higher education, Will insists, has the responsibility to serve not just as a source of economic growth, but as society’s critic and conscience.

Should universities have presented a firmer counterweight to economic irresponsibility?

As the world indulged in a bubble of false prosperity and excessive materialism, should universities — in their research, teaching and writing — have made greater efforts to expose the patterns of risk and denial? Should universities have presented a firmer counterweight to economic irresponsibility? Have universities become too captive to the immediate and worldly purposes they serve? Has the market model become the fundamental and defining identity of higher education?

Since the 1970s there has been a steep decline in the percentage of students majoring in the liberal arts and sciences, and an accompanying increase in pre-professional undergraduate degrees. Business is now by far the most popular undergraduate major, with twice as many bachelor’s degrees awarded in this area than in any other field of study. In the era of economic constraint before us, the pressure toward vocational pursuits is likely only to intensify.

As a nation, we need to ask more than this from our universities. Higher learning can offer individuals and societies a depth and breadth of wisdom absent from the inevitably myopic present. Humans beings need meaning, understanding and perspective as well as jobs. The question should not be whether we can afford to believe in such purposes in these times, but whether we can afford not to.

ENLARGED CAPITALS

AN ENLARGED LETTER cut into the text block is called a *drop capital* or *drop cap*. This example was produced using the Drop Caps feature in a page layout program. The software automatically creates a space around one or more characters and drops them the requested number of lines. Adjusting the size and tracking of the capital allows it to match the surrounding text. Similar solutions can be implemented on the web in CSS. The space around the capital is rectangular, which can be visually awkward, as seen here with the sloping silhouette of the letter A.

WAS IT THE BEST OF TIMES, the worst of times, or just Times New Roman? The drop capital used here (Thesis Serif Bold) was positioned by hand as a separate element. A text wrap was applied to an invisible box sitting behind the capital. Thus the text appears to flow around the intruding right prow of the W. Likewise, the left prow extends out into the margin, making the character feel firmly anchored in the text block. Hand-crafted solutions like this one can't be applied systematically.

GRAB YOUR
READER BY
THE CAHUNAS
AND NEVER
EVER LET GO

DESIGNERS SOMETIMES ADAPT the drop cap convention for other purposes. An illustration or icon can appear in place of a letterform. Purely typographic alternatives are also possible, such as inserting a title or subtitle into space carved from the primary text block. Such devices mobilize a familiar page structure for diverse and sometimes unexpected uses.

Monday. First day of the kids' summer camp. They're asleep. We're late. Late for gluing gemelli noodles into representations of mommy and daddy and spraypainting them as gold as Elvis jumpsuits. Late for searching for sticks and pine needles in the lawn skirting the church parking lot, *flora detritus* destined to simulate porcupine quills on cardboard toilet-paper tubes. So here we go, summer camp for six- to seven-year olds. They'll be home by lunch. For breakfast, let them eat Cheerios.

Breakfast

I check my email and shout at the ceiling. An upstairs toilet flushes, and I cry, "Let's go, People! We got summer camp!" My AOL welcome screen encourages me to guess the identity of a female celebrity from her elementary-school photo. It is Catherine Zeta-Jones. I can see

I make microwave popcorn and watch the blue seconds count down feeling like seconds of my life are ticking away, which I guess they are. I decide that I want to invent a Mortal Positioning System so you can always know where you are in your life and how much time you've got until you die. Some people really like to plan. I don't. Whatever I plan, I don't do. The good life plays as improv. Every night is open-mic night. I read a study once that said married fathers have the lowest testosterone levels. I wonder if this means anything that matters. Unpopped kernels are as hot as shell casings. Tina puts *Spirit: Stallion of the Cimarron* in the DVD player, and I herd the kids in front of the TV.

Lilly and Lance take off their shirts like the shirtless Indian brave and mimic what he does onscreen. Then the horse bucks and spins, and the kids take off all their clothes and buck in the corral of the living room.

Tina and I sneak upstairs.

"It's lovin' o'clock," I say.

Tina locks the door while I pour the mouthwash.

We charge around the bedroom, tackling each other, leaping off the mattress—well, not exactly "leaping," but squeezing and spanking and biting. We clench and claw and swallow the held breaths of each other's screams.

Lance pounds our door, and Lilly cries, "It's an emergency!"

But Tina and I are exhausted, bruised, and content, our faces tensionless, our limbs strewn across the end of our stolen day.

T

HE INTERVIEWER WANTS TO KNOW, FOR THE RECORD, HOW OUR MARRIAGE IS.

Form

"Rocky," I say.

"Very rocky," agrees my wife.

"Worse than that," I say.

"Yeah," says Tina, "much worse."

"It's a shambles."

"We're on the outs."

"We're on the skids."

"We're separating."

"Actually," I say, "separation is a *fair accompli*."

"We've been living separate lives for some time now."

"Years, really."

"Doomed from the start," says Tina.

"It just took this interview process for us to admit what's been staring us in the face."

The interviewer depresses the STOP button. Tina had moved the candles and

Inside pages

Te volioribus exerci lismo mos restibus, conem si volorum alitium torrorum atus estrum repudae nist aut que invelis quas debet exarctit ped maximolore doler accus core natorum qui am vent ipsam remperro corest pa corendam, ut as et am arum, sunt quam, cupat essitit voloresud qui aut ius, acceptat insillorio omnimpenbea con cusam ism et harum expes eiuntis asperati coresent veriossum rendicentem re eos ipsumque coreperciis re odici conseqno endi con pliquiatem sequeraia disqui conetisum fugiate quam, cum aut ut eliquam, consendi ullignient mos moluptatet accaborero corpus nonseque dest id unt, quaerum dolores et quam, con restio et re listem aut estrum facefasciunt alicimi nitaquet nos in res rectaque modiatatur sunt doluat atremquia expliquia quas malon cumquodior magnis ene vellautem aditibus, sit aut dentibu scieni incti tectotalpsuda poreperi odis est velestrume volupaspere mincia verroreroesto te execa aut verbus de eos num dolum mo labore, quos aceribus, simincimi, ipsante imporumende entem etusame remose magniet qui accaborum rerion eatessu ndest, quam aliaep estrumqui del inctur sin re, tem fuga. Itatusandae esto estio. Doluptatus mos ipsape venis et et fugit, ommodi omniet rereum atemod queaptatur? Venis dolupta endandisque imusdam, soluptae.

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Pull Quotes



**HALF THE
FOLKS
CAN'T TELL
YOU WHAT
THEY'RE
DOING
BECAUSE
IT'S A
SECRET,"
SAYS BOB
BORCHERS,
A FORMER
EXEC.**

was." Others do know but won't say
tion that hits the newbies on their f
work at new-employee orientation.

"You sit down, and you start with
roundtable of who is doing what," r
Borchers, a product-marketing exe
the early days of the iPhone. "And I
can't tell you what they're doing, be
secret project that they've gotten hi

The new employees learn that fi
work that they've joined a differen
company than any they've worked
Outside, Apple is revered. Inside, i
ish, and neophytes are entrusted v
much information. All new emplo
a half-day of orientation, always o
day—unless Monday is a holiday. I
orientation is standard big-compa
welcome package with stickers say
joined Apple, HR forms, and the l
quickly makes the employees of th
few companies it acquires underst
now part of the Apple family. Lars
who became director of partnersh
ances in Apple's iAd mobile-adver
ness when Apple bought his startu
Wireless, recalled the delight whe
shiny new iMacs showed up almos
ately following the close of the tra
"People felt very quickly like you v
something special," he said. Orien
day brings another rare treat. "Th
one free lunch at Apple, and it's or
day," said a former employee.

Pull Quotes: quotations or highlights
pulled from the article and set apart, usu-
ally at larger size, different font and color
from other text.

Pull quotes emphasize important parts of
the story and create a visually interesting
graphic element.

in place beneath the telescope's frame.

In optical SETI, the reflectors are not used for focusing on fine details of wispy nebulae or galaxies, as they are in conventional astronomy; instead, they serve as "photon buckets" for catching the light from a distant pulse.

To snag something moving at the speed of light, even buckets need fast reflexes, and at Leuschner, those reflexes are exercised in a metal box bolted to the back of the telescope.



Werthimer fashioned the detector in his basement from conventional electronic components for around \$10,000. It captures and counts photons falling into the telescope. It does so not like a regular bucket, filling with more and more photons, because those from an alien laser would mix indistinguishably with all the other photons. Instead, it effectively counts photons for a nanosecond and dumps them, counts for another nanosecond and dumps them, and so on. "If it saw a pulse, you'd get a whole bunch of photons at once," Werthimer says.

When Werthimer first tested his detector, he started picking up pulses right away. That puzzled him; he couldn't be *that* lucky. Then he realized the detector's radiation sensitivity was exceeding its specificity: It was registering traces of radioactive decay coming from inside the detector itself. Now equipment splits the light from the telescope into two streams, each of which flows into an identical detector in the metal box. If only one registers a signal, it's likely an errant one, originating within that detector; if both register a signal simultaneously, Werthimer might have something.

Werthimer has recently begun using the Leuschner telescope to spy on the first of about 2,500 stars that are considered about the right temperature and the right age—at least a few billion years old—to nurture life now capable of communicating. It will also look in

At Harvard, Paul Horowitz is doing similar work with light that other astronomers have collected but didn't need for their own observations; he is funneling this excess light into slightly fancier dual photon detectors. So far, about 100 simultaneous flashes have been detected, but none has appeared on a second look, suggesting that Harvard's photon bucket is collecting occasional cosmic rays.

Horowitz is now considering a search that would pair the Harvard telescope with one at Princeton University in New Jersey. Just as Werthimer's two photon detectors cross-check each other, the two telescopes would be trained on the same star simultaneously,

and a computer could be programmed to discount cosmic rays. If they both picked up a pulse, Horowitz says, "we go berserk."

As a communication device, the pre-eminent strength of lasers is that the light they produce is tightly focused and thus easy to aim. "Optical is not scattered like radio," Horowitz says. "It cuts through space like a hot knife through butter." But when it comes to SETI, that feature is laser light's pre-eminent weakness. Because the beam is so narrow, it can be blocked by interstellar dust. In addition, the narrowness would require another civilization wanting to reach us to aim its laser carefully, which would in turn require it to know enough about us and the continuous movement of our solar system to predict where we would be after the many years needed for laser pulses to cross the vast distances of space. Either that, or Earth would have to serendipitously drift into the line of fire of lasers shooting between other civilizations scattered among the billions of stars in the galaxy. "If there's a big conversation going on out there—like Carl Sagan said, 'a galactic Internet'—then maybe space is full of criss-

Marcy and colleague Paul Butler may be the world's best-known planet hunters: By discerning subtle shifts in various stars' optical spectra, they have so far spotted around a dozen planets circling. When it comes to other stars, they now believe planets are probably the rule, not the exception.

That sounds like the kind of conclusion that would only encourage SETI boosters. According to Frank Drake's famous equation, a large number of planets, among other factors, increases the number of alien civilizations we could detect. And yet, as we have looked farther and farther out into the heavens, as we have listened for radio signals year after year, we have neither seen nor heard any convincing evidence of an alien civilization.

SETIologists offer plenty of explanations: Maybe we have been quarantined ("with good reason," Marcy quips). Maybe our location, on the

fringe of the Milky Way, has put us outside the range of Milky Way inhabitants who are signalling one another. Maybe advanced civilizations communicate with fiber optic cables and thus don't leak light signals. Maybe their waves cannot punch through our atmosphere. Maybe we just haven't invented the right detectors.

Maybe no one's out there. "I've spent thousands of hours at major professional telescopes, and I've never once seen anything even remotely suggesting extraterrestrial intelligence," says Marcy, who counts SETI veterans Werthimer and Jill Tarter as good friends ("We go salsa dancing together"). "With all our searching, we have received no results in abundance. Some people say, 'Well, that doesn't prove anything,' and they're right. You can't prove there's no intelligence out there. But does it say something? Yes, it says that intelligence may be less common than we had hoped."

Nonetheless, one of Marcy's gradu-

"If there's a big conversation going on out there, maybe space is full of criss-crossing laser beams and some will hit us."

PHOTOGRAPHED
BY KURT MARKUS



**K
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BY FRED
SOHRBERS

A star and director of the big-budget, big-risk 'Dances With Wolves,' the bankable hawk proves he isn't as low-key as he looks by tackling racial injustice in an epic of power and sweep.

IN A NOVEMBER EAST NORTH OF SANTA Fe, South Dakota, on the winding Spanish Canyon Road in the wake of a hunt, Kevin Costner is capturing a wry moment along a stream that snakes through rocky ground. It's a pivotal scene for *Dances With Wolves*, the three-hour epic

western in which Costner not only stars as a renegade Union officer living among a tribe of Sioux Indians but also makes his debut as a director. Some 150 thousand Union soldiers are adding up in the only morning mist. "Okay, let's make it up," says Costner, and the mist is wondrously generated by smoke blown down the road from a number of wind machines. *EW*



THE CAGED BIRD SINGS

FIONA

WHEN FIONA APPLE PULLS into a new town — some place where she has never been before but where tonight there is a theater with her name on, and an audience waiting to suck in her pushy, poignant songs of disaffection and self-reliance — she takes a peculiar pleasure in picking up a copy of the local newspaper and reading its short, skewed, action-packed summary of her life and credentials. "Fiona, who said something bad at the MTV awards," she offers, by way of ex-

BY CHRIS HEATH
PHOTOGRAPHS BY MARK SELIGER

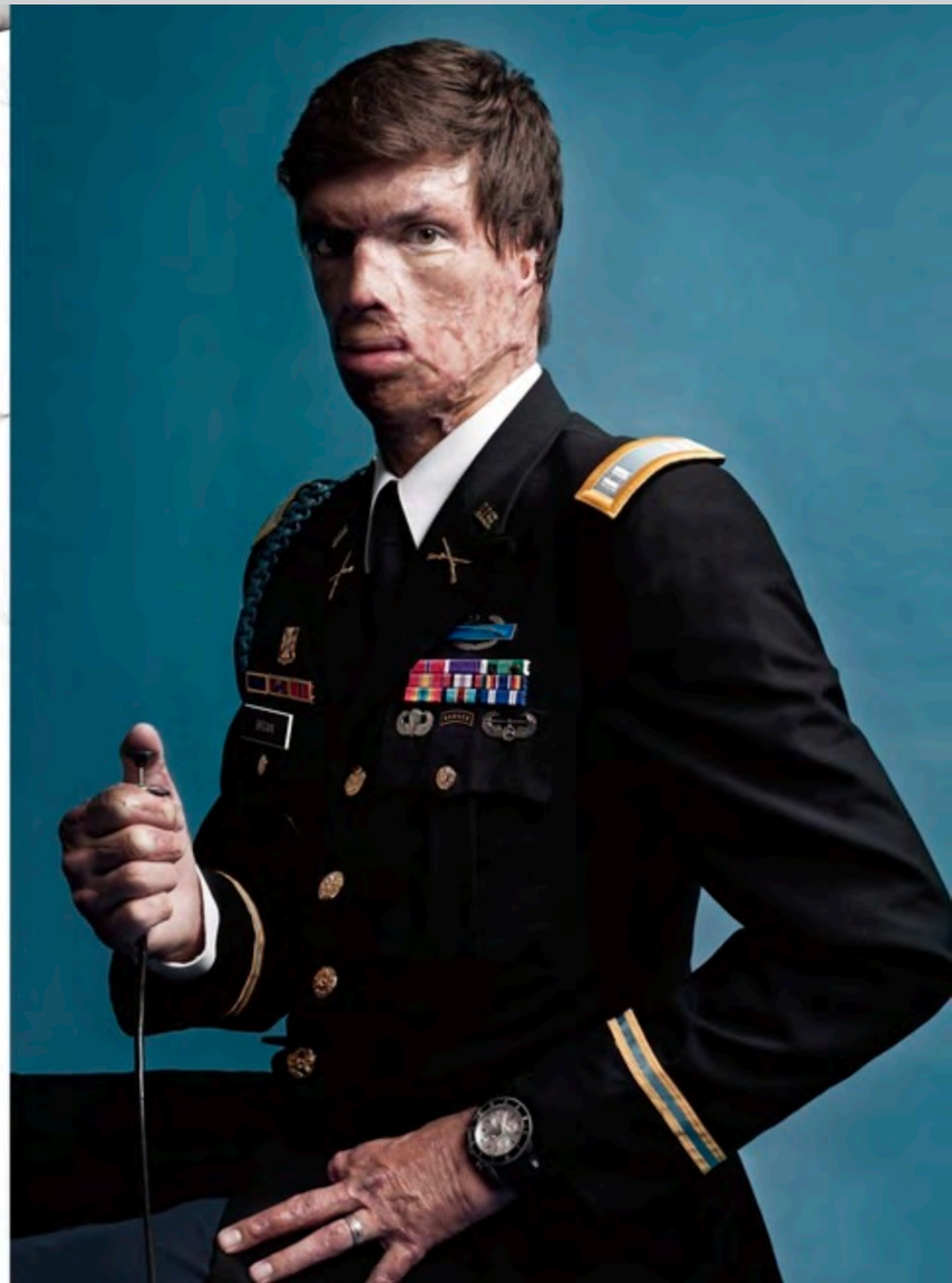
BURNING ING MAN

On his first tour of duty in Afghanistan, **SAM BROWN** was set on fire by an improvised explosive device. He survived, only to find himself, like thousands of other vets, doomed to a post-traumatic life of unbearable pain. Even hallucinogen-grade drugs offered little relief, and little hope.

Then his doctors told him about an experimental treatment, a painkilling video game supposedly more effective than morphine. If successful, it would deliver Brown from his living hell into a strange new world—a digital winter wonderland

by **JAY KIRK**

Photographs by **ETHAN LEVITAS**



Francesco Griffo (1450–1518)

brilliant typeface designer & punch cutter at Aldine Press.

Griffo cut roman, Greek, Hebrew, & the first italic types for Aldine editions.

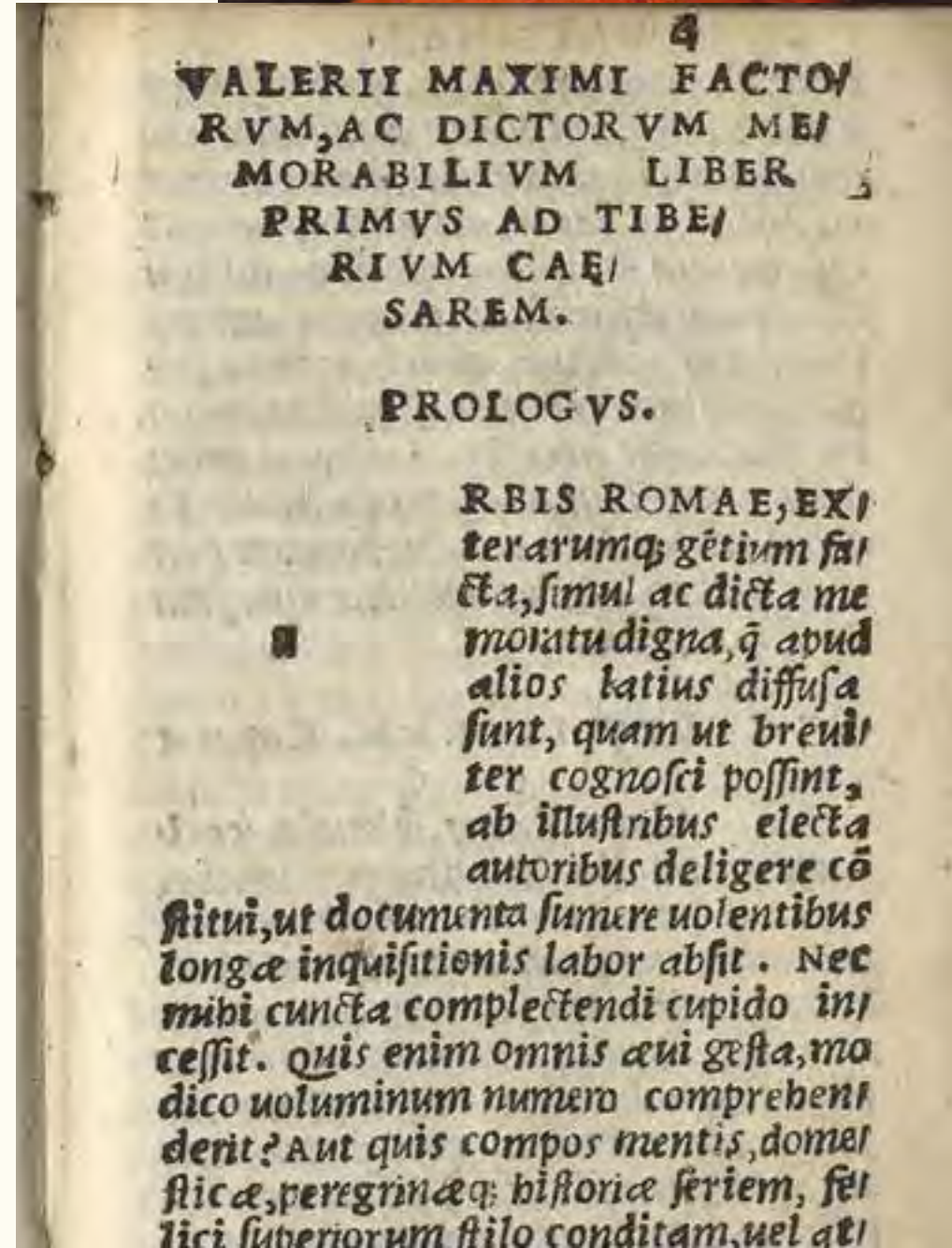
His initial project in Venice was a roman face for De Aetna by Pietro Bembo in 1495

Griffo researched pre-Caroline scripts to produce a roman type that was more authentic than Jenson's designs.

Style survives today as book text face Bembo.

Griffo's typefaces became the model for the French type designers who perfected roman letterforms during the following century.

<https://www.fonts.com/browse?filter=family:classification:serif,family:classification:serif:oldstyle>



P. V. M. Bucolica. Georgica. Aeneida quam emenda-
 ta, et qua forma damus, uidetis. cætera, quæ Poe-
 ta exercendi sui gratia composuit, et obscœna, quæ ei-
 dem adscribuntur, non censuimus digna enchiridio.
 Est animus dare posthac iisdem formulis optimos
 quosque authores. Valete.

IN GRAMMATA
 LAVI

Qui graiis dedit Aldus, en
 Dat nunc grammata scalp
 Francisci manibus Bononi

ALDVS STUDIO SIS
 OMNIBVS .S.

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IN GRAMMATOGLYPTAE
 LAVDEM.

Qui graiis dedit Aldus, en
 Dat nunc grammata scalp
 Francisci manibus Bononi

P. V. M. MANTVANIBV
 COLICORVM
 TITVRVS.

Melibaens. Tityrus.

Tityre tu patula recubas sub Me-
 te gremio fagi
 Siluestrem tenui musam mediteris
 auena.
 Nos patria fines, et dulcia linqui-
 mus arua,

Nos patriam fugimus, tu Tityre lenus in umbra
 Formosam resonare doces Amyllida siluas.
 O Melibæ, deus nobis hæc oia fecit.
 Neque erit ille mihi semper deus, illius aram
 Sæpe tener nostris ab ouilibus imbuet agnus.
 Ille meas errare boues, ut cernis, et ipsum
 Ludere, quæ uellem, calamo permisit agresti.
 Non equidem in uideo, miror magis, undique totis Me-
 vsque adeo uerbatur a gris, en ipse capellas
 Perrotinus æger ago, hanc etiam uix Tityre diu-
 Hic inter densas Corylos modo nanaq; mellos,
 Sæpe greges ab silice in nuda conuicia reliquit.
 Sæpe malum hoc nobis, si mens non leua fuisset,
 De caelo uictas memini prædicere querens.
 Sæpe sinistra cæna prædixit ab ilice cornix.
 Scd tamen, iste deus qui sit, da Tityre nobis.
 Vrbem, quam dicunt Romanam, Melibæe putanti Ti-
 sulus ego huic nostra similem, quo se pe solennus

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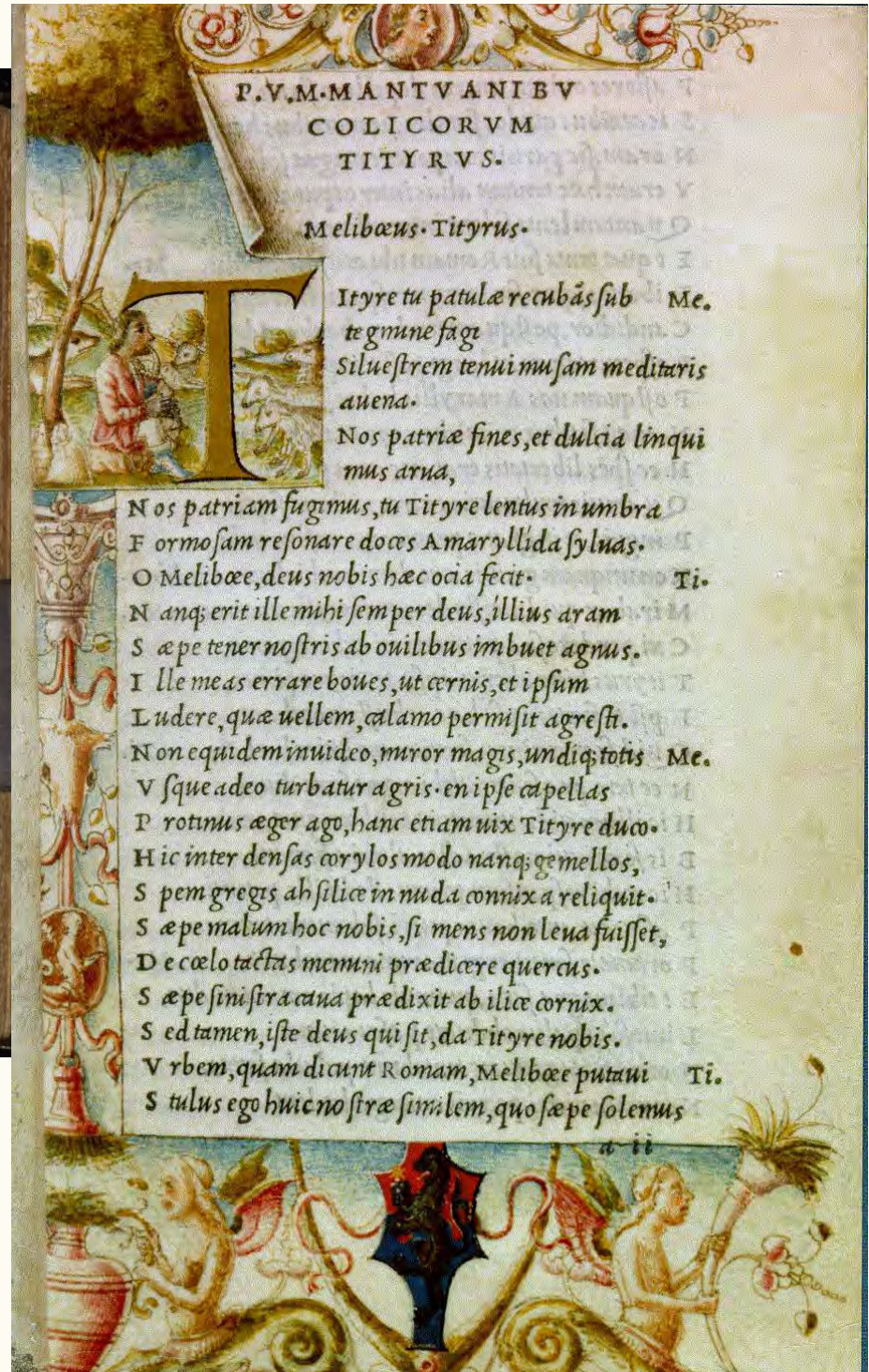
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Manutius Virgil's Opera (1501)



Geoffroy Tory (1480–1533)

a true renaissance man whose accomplishments ranged from professor, scholar, & translator to poet & author; from publisher, printer, & bookseller to calligrapher, designer, illustrator, & engraver.

He translated, edited, & often published Latin & Greek texts. As a reformer of the French language, he introduced the apostrophe, the accent, & the cedilla. In the graphic arts, he played a major role in importing the Italianate influence & then developing a uniquely French Renaissance school of book design & illustration.



