THE HEAD IN FOOTBALL

The History of Concussions and the Future of the Sport

Michael Oriard

Concern over head injuries in football is now a national discussion that threatens the future and character of the game at all levels, but especially in the professional arena. The National Football League, after years of ignoring or denying the problem, is trying hard to catch up to the public mood and preserve a $9 billion business. Parents and schools are fearful. How we came to this point in the development of football is the subject of Michael Oriard's penetrating investigation of the physical and cultural aspects of the sport as they affect the role of the head. Mr. Oriard, who has played football at all levels—high school, college, and professional—brings a unique perspective to an urgent subject.

Michael Oriard played football for the University of Notre Dame and the Kansas City Chiefs and is now retired from Oregon State University, where he was distinguished professor of American Literature and Culture and associate dean of the College of Liberal Arts. He is the author of seven books, including a football memoir, *The End of Autumn*, and four volumes on the cultural history of American football, and has written on football for the *New York Times*, the *Washington Post*, *Slate*, and *Deadspin*. The documentary film

Gladiators: The Uncertain History of American Football, for which he wrote the script, debuted at the Twin Cities Film Festival in October 2013.

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I: Mike Webster's Brain

The first part of this story, at least its broad outlines, should be familiar.

On September 24, 2002, Mike Webster died from heart failure at age fifty, five years after being inducted into the Pro Football Hall of Fame. The news was shocking, though not unexpected. A few weeks before his induction in Canton, *SportsCenter* had reported that "Iron Mike," after seventeen NFL seasons and anchoring the Pittsburgh Steelers' offensive line during the Super Bowl years of the 1970s, was now bankrupt, homeless, depressed, and wracked by convulsions and spasms. Less serious but somehow more gruesome, when tiny cuts to his legs would spurt blood, Webster and his wife—when he still had a wife—

would cover his veins with SuperGlue to protect the carpet and furniture.[1] A pathologist in Pittsburgh with an interest in head trauma, Dr. Bennet Omalu, did the autopsy. Webster had died of a heart attack, but after hearing about his erratic behavior Omalu wanted to examine his brain. It took him many months to puzzle out those brown stains that he found in the tissue under his microscope, but he came to realize that they were tau protein, indicating chronic traumatic encephalopathy (CTE), or Punch-Drunk Syndrome, first identified in boxers in 1928.

For the NFL and for football at all levels, Omalu's finding changed everything instantly, though it would take several years for this realization to sink in.

Long before Webster died, the public knew—from the occasional story about Hall of Fame running back Earl Campbell unable to get in and out of his pickup truck, or legendary quarterback John Unitas attaching his useless hand to his golf club with Velcro—that playing pro football was dangerous to long-term health.[2] Surveys in the 1990s and early 2000s typically found more than 60 percent of former players with permanent injuries.[3] The crippled ex-pros invariably expressed no regrets about playing and said they would unhesitatingly do it again. The benefits, less financial than personal, outweighed the costs. But these were damaged bodies, not brains, until Mike Webster's autopsy told a different story.

That story emerged piecemeal over several years. Omalu did not publish his findings in a medical journal until July 2005. After the bizarre death of another Pittsburgh lineman, forty-five-year-old Terry

Long, apparently from suicide after drinking anti-freeze, Omalu again found signs of CTE. His third case was Andre Waters, another suicide at age forty-four. Then came Justin Strzelczyk, a third ex-Steeler lineman, who had died at thirty-six in a fiery car crash three years earlier after a high-speed chase with police.[4] Here were four extreme cases over nearly five years, seemingly isolated, not parts of a larger pattern. Meanwhile a former Harvard football player, now WWE wrestler, named Chris Nowinski suffered one too many concussions and was forced to retire. Learning from a specialist in Boston, Dr. Robert Cantu, what his head injuries had done to him, Nowinski embarked on a crusade to call attention to the issue. In 2006 he wrote a book, *Head Games: Football's Concussion Crisis from the NFL to Youth Leagues*. A year later he founded the Sports Legacy Institute, partnering first with Bennet Omalu, then in 2008 with Cantu and his colleagues at Boston University, including neuropathologist Ann McKee, in creating the Center for the Study of Traumatic Encephalopathy. The CSTE's "brain bank" and McKee's lab at the VA hospital in Bedford, where she performed her autopsies, soon became the final destination for the brains of former players who died young and violent, or older and long demented, whose families wanted to know whether football was the cause. At this point only Alan Schwarz of the *New York Times* was paying close attention, but since what the *Times* reports often becomes a national story, the sense of a broader issue was slowly unfolding.

Unable to ignore the growing alarm, first-year NFL commissioner Roger Goodell convened a Concussion Summit in June 2007. With potential disability claims from hundreds of former players at stake,

the league's medical "experts" attacked the research and researchers connecting football and later brain damage. But players kept dying, often young; Omalu and McKee kept finding signs of CTE in their brains; and Alan Schwarz kept reporting their findings in the *New York Times*. On a separate front, in May 2009 the Washington state legislature passed the first law requiring concussion education and establishing return-to-play guidelines for youth football, not quite three years after a middle-schooler named Zachery Lystedt was permanently damaged by a second concussion suffered in the same game. House Bill 1824, the Lystedt Law, was a local matter but also the beginning of what would become campaigns in all fifty states.

Finally, in the fall of 2009, the emerging story reached the general public. In September the *Times* and every other news agency reported on a survey of former NFL players conducted by researchers at the University of Michigan and commissioned by the NFL itself, in which the players or their families reported rates of dementia nineteen times greater than the norm for men ages thirty through forty-nine, six times greater for men over fifty. The customary denials by the NFL, this time attacking its own commissioned study, seemed increasingly desperate as well as indifferent to the well-being of the men who had built the league. A major article in *GQ* in October recounted the full story of Mike Webster, Bennet Omalu, the discovery of CTE, and the struggle for recognition in the face of NFL deniers. Another piece the same month by Malcolm Gladwell in the *New Yorker* added the wrenching stories of Tom McHale and Wally Hilgenberg, two of McKee's sixteen cases of CTE so far, and of Kyle Turley, still living

but already suffering just a few years after retiring from football. Gladwell also described the research of Kevin Guskiewicz at the University of North Carolina, where sensors in players' helmets recorded the force of every head blow in practices and games, and revealed more than a thousand for individual players in just one season.[5] Brain damage from football might not be the curse on an unlucky few in the NFL but an epidemic in football at all levels.

Congressmen follow the news too, and after the release of the Michigan study the House Judiciary Committee announced hearings on football and head trauma for late October. With CNN cameras capturing the spectacle, representatives lambasted NFL commissioner Roger Goodell for adopting Big Tobacco's game plan of denial in the face of overwhelming evidence. With defiance now a greater risk to the NFL's brand than admission, Goodell reversed course. In November 2009 he announced new protocols for concussion management; then in December, with no fanfare, an NFL spokesman casually acknowledged the relationship between head blows in football and later brain disease.

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These events marked the beginning of a new era for the National Football League and for football everywhere. Its outcome is uncertain. Since 2009 the litany of CTE-damaged players has steadily grown and now includes some of the greatest players of the 1950s and 1960s: Joe Perry, Ollie Matson, John Henry Johnson, Cookie Gilchrist, John Mackey. The most shocking cases have been more recent players.

Dave Duerson's suicide in February 2011 was a watershed moment: shooting himself in the heart rather than the head and leaving a note instructing that his brain be autopsied for signs of CTE. The cool calculation behind this act of insanity and despair brought home the devastation of the disease in an appalling new way. The suicide of Junior Seau fifteen months later had the same effect. Cookie Gilchrist and John Henry Johnson were distant memories for fans over sixty, but everyone remembered Junior Seau, fewer than three years removed from twenty NFL seasons of playing with a passion that he carried over into everything he did. It was like learning that Santa Claus was clinically depressed. Fans were left wondering, how many more are out there, afflicted? How many more are okay now but will be afflicted later?

A different question haunts the NFL: how much did the league know about the risk to players' brains, and when did it know it? The settlement in September 2013 of a class-action lawsuit brought by more than 4,500 former players unfortunately did not provide an answer, it only set a price—a mere $765 million instead of the anticipated billions—for the league's payments to brain-damaged players. The players settled for a measure of immediate relief while the NFL won big. For a small cost it got this ugly battle out of the headlines while admitting no liability.

What league officials knew, and when, is more than an academic question—or rather, that's exactly what it is. In the 1980s and 1990s medical experts began determining that concussions were much more consequential than previously assumed, but public awareness always

lags behind researchers' discoveries. At what point during all of those years of denial did the NFL's own "experts" know, or should they have known, the real risk of head injuries? How much sooner could the handling of head injuries have changed, not just in the NFL but at all the lower levels of the game that follow the NFL's lead? Now we may never know.

The NFL today is still the nine-billion-dollar colossus of American sports and entertainment. New rules to eliminate helmet-to-helmet contact, backed by stiff fines and even suspensions, and regulations to reduce the number of collisions in practices as well as games (the brain doesn't know the difference) will make football safer. New protocols for concussion management will protect players from the subsequent head injuries—the so-called second-impact syndrome—that are far more dangerous than the first. And similar changes (without the fines to players) in college, high school, and youth football will extend more protection to the millions of kids and young men who are not financially compensated for the risks they take. The NFL's own youth football program, Football USA, has taken the lead in changing rules and guidelines for the youngest players, and Commissioner Goodell has been a public advocate for rules on concussion prevention and management, modeled on Washington's Lystedt Law, that have been adopted in forty-eight states. In 2011 the National Federation of State High School Associations issued new guidelines. The NCAA has closely followed the NFL in changing its own medical protocols and limits on contact.

But is all of this enough? Beneath all these advances for player safety lie fundamental uncertainties. We now know that football is more dangerous than we ever imagined, and in more insidious ways, but just how dangerous it is we do not yet know. That's a scientific question that researchers have yet to answer. Others are cultural: For players, can football ever be made safe enough? For fans, can safer football be as thrilling? Most simply and fundamentally, how safe can football be and still be football?

The obstacles to answering the scientific question are daunting. CTE itself is little understood. Finding biomarkers to detect it in living brains, rather than only by autopsy, will be a major advance, and that breakthrough may not be far off. But understanding how CTE develops, as well as the specific causes and prevention of brain trauma, will be more elusive. Researchers know that concussions can be dangerous. They also know that subconcussive blows—the hundreds of routine hits experienced by players each season—can be dangerous. But they don't know which ones are more dangerous. They also don't know what kinds of blows—of what force, at what angle, to what part of the brain, to which individuals—are most dangerous.

While researchers pursue answers, parents must decide—on the basis of limited understanding—whether to allow their sons to play tackle football. The demographics of football are changing as I write, though how this will play out will remain unclear for a while. The kids whose parents opt out of football are likely the ones who have options. Already, roughly two-thirds of NFL players are African American, which is no impediment to the passionate interest of all

races. But what if better-off whites watching the games know that young black men from disadvantaged backgrounds are destroying their brains for our pleasure—that, say, 20 or 30 percent of them will end up demented, maybe suicidal, in their forties or fifties? Will we be able to continue watching NFL football with pleasure? I hope not. The one truly mass-cultural sport in this country might become a niche sport like boxing or Ultimate Fighting.

The most obvious way to avoid the long-term consequences of head injuries is to eliminate or sharply reduce head injuries, and the most radical proposals would take the head out of football altogether. Put linemen in two-point stances so that they cannot lead with their heads. Ban helmets and play something closer to rugby. American football has been around for nearly 140 years, initially without helmets, and for roughly 80 of those years without the head as a weapon. Can we return to that kind of football if the game's future depends on it? Here we must look to culture and history rather than science for clues.

II: Necessary Roughness

This part of the story I assume is less familiar. Its main point is simply that football has always been violent, by choice as well as chance. Hopes for making the game safer today must take that history into account.

American football evolved from English rugby in the 1880s as a *collision* sport, partly by accident, partly by design. What we celebrate as the first intercollegiate football game, on November 6, 1869, between Princeton and Rutgers, was actually a soccer game, won by Rutgers 6 goals to 4. Having to choose between a British schoolboys' kicking game (soccer) and a carrying game (rugby), the handful of American colleges involved in organizing football all preferred the kicking game, except for Harvard which had learned rugby from McGill University in Canada. But Harvard was the preeminent American university, and in 1876 it prevailed when it joined Yale, Princeton, and Columbia in adopting rugby rules. A Yale man, Walter Camp, took over after that. Camp proposed the two rules that created American football out of English rugby: first, in 1880, assigning possession of the ball to one side at a time, in a "scrimmage" that replaced the rugby "scrummage" (scrum); and second, in 1882, requiring that the team with the ball advance it five yards (or lose ten) in three tries. Camp also devised the scoring, specialized positions—guards and tackles, quarterbacks and fullbacks—and most of the other foundational rules, but the basic nature of the new game was determined by those two radical rules changes in 1880 and 1882.

Camp intended to make football more rational, to eliminate the randomness of the scrum and to allow for tactics and strategy—the set plays that became possible once a team had possession of the ball. The unintended consequence was to make American football a collision sport. By rugby rules, offensive linemen were guilty of being "off-sides"—and thus penalized—as soon as the ball was heeled or tossed

back to a teammate behind them. Attempts to legislate against off-sides play and "interference" by linemen were abandoned as impossible after a few years. We now call this "blocking." The linemen nose-to-nose on the line also began doing what came naturally: slugging each other, sometimes before the ball was put in play. The brutality of football in the 1880s outraged critics while defenders distinguished illegal "slugging" from the legitimate give-and-take of a bracingly rough sport. Generations of American men who missed out on the man-making tests of the Civil War and were increasingly uneasy about over-civilization found in football a proving ground for future leaders. The lads slugging each other, after all, were students at Harvard, Yale, and Princeton. Their roughhousing was not that of mere ruffians—like prizefighters, say. The era's great patron of prizefighters, Richard Kyle Fox, editor of the *National Police-Gazette*, recognized the elitist hypocrisy and launched a campaign in his weekly paper—not to delegitimize college football but to legalize his own sport (*Figures 1 and 2*). Prizefighting would remain illegal in most of the country until the 1920s while college football became a major spectator sport. The slugging in football might have been excessive at times, but a rough sport, properly supervised, was precisely what the nation's elite, despite misgivings, felt it needed.

Figure 1. "Cheerful Sport Between the Aesthetic Young Men of Princeton and Yale," as portrayed in Fox's *National Police-Gazette*, December 20, 1884.

Figure 2. The humor magazine *Judge*, with an elite audience rather than the working-class readers of the *Police-Gazette*, picked up on this theme in 1889 (November 30) in a cartoon featuring heavyweight champion John L. Sullivan.

While linemen were slugging it out, behind them the backs could advance the ball either by evasion or assault: runs around the end or plunges into the line. Quick, elusive backs became the offensive stars until 1888, when a new rule (Camp's again) legalized tackling below the waist. Instead of having to get close enough to grasp the runner's upper torso, tacklers could now launch themselves from a distance. End runs were stopped, line smashes commenced. And both

put the head at risk, either flung at the runner's legs or potentially crushed in a pileup.

Tactical genius also made its appearance, which was what Camp was after. No one had thought yet to specify how many men could line up in the backfield. If success now meant battering the defense rather than running around it, it followed that you wanted your biggest, strongest players leading the charge. Nor had anyone thought yet to prevent the men behind the line from moving forward before the ball was put in play. All of the behemoths in the backfield could be running at full speed when they collided with stationary defenders as the ball was snapped. Camp at Yale and rivals elsewhere began devising "mass-momentum" plays: "guards-back" and "tackles-back" formations (exactly what they sound like—guards or tackles lined up in the backfield), along with various wedges from Princeton's "V-trick" to Harvard's more famous "flying wedge." (Harvard sprang the flying wedge on Yale at the end of the 1892 season; it was banned after too many injuries resulted in 1893.) The result was a dramatic shift from "open" to "mass" play. And mayhem.

Football in the 1880s and 1890s was indeed often brutal, but the media also exaggerated the brutality. The "media" at this time were newspapers and magazines. Football developed coincidentally with the development of the modern newspaper, led by Joseph Pulitzer with his *New York World* beginning in 1883. Pulitzer and William Randolph Hearst, who purchased the *New York Journal* in 1895, sensationalized football and football violence for the same reason they

sensationalized crime and scandal, not with any agenda regarding the sport but to build circulation. Other papers followed their lead.

Sports journalism in the 1880s and 1890s was overwrought and colorful, self-consciously "literary" or ironic, even in the staid *New York Times*, as in this description of the Yale-Princeton game in 1888:

> The favorite methods of damaging an opponent were to stamp on his feet, to kick his shins, to give him a dainty upper cut, and to gouge his face in tackling. All these delicate attentions occurred at one time or another through the game, but always when the referee was not looking, or at least when he was thought not to be looking. It is a characteristic of the modern football player that if he suffers in this respect he does so in silence. He never complains, but possesses his soul with patience and awaits a moment for retaliation.[6]

The all-text daily newspaper of the early 1880s became lavishly illustrated a decade later, particularly the large-circulation dailies. Coverage of the big contests among Harvard, Yale, and Princeton invariably included caricatures of a game stalked by Death or requiring ambulances on site for the casualties (*Figures 3, 4, and 5*).

Figure 3. *New York World*, November 26, 1893.

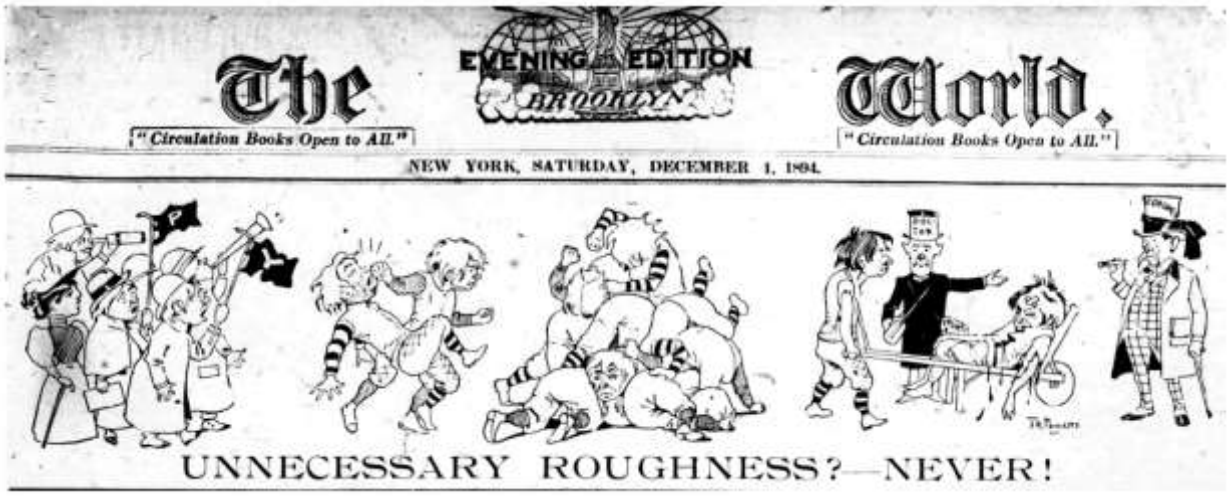


Figure 4. *New York World*, December 1, 1894.

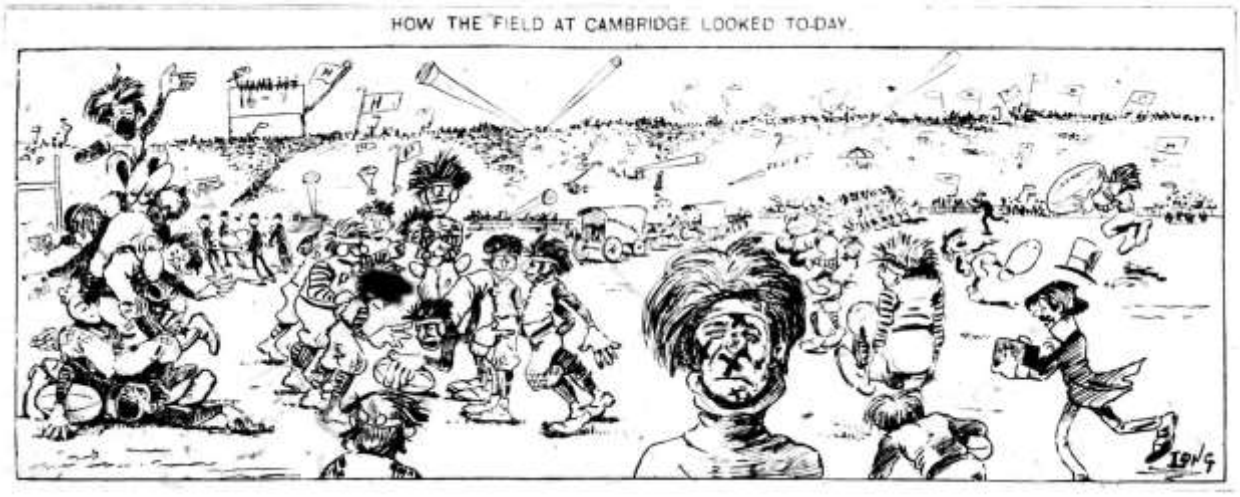
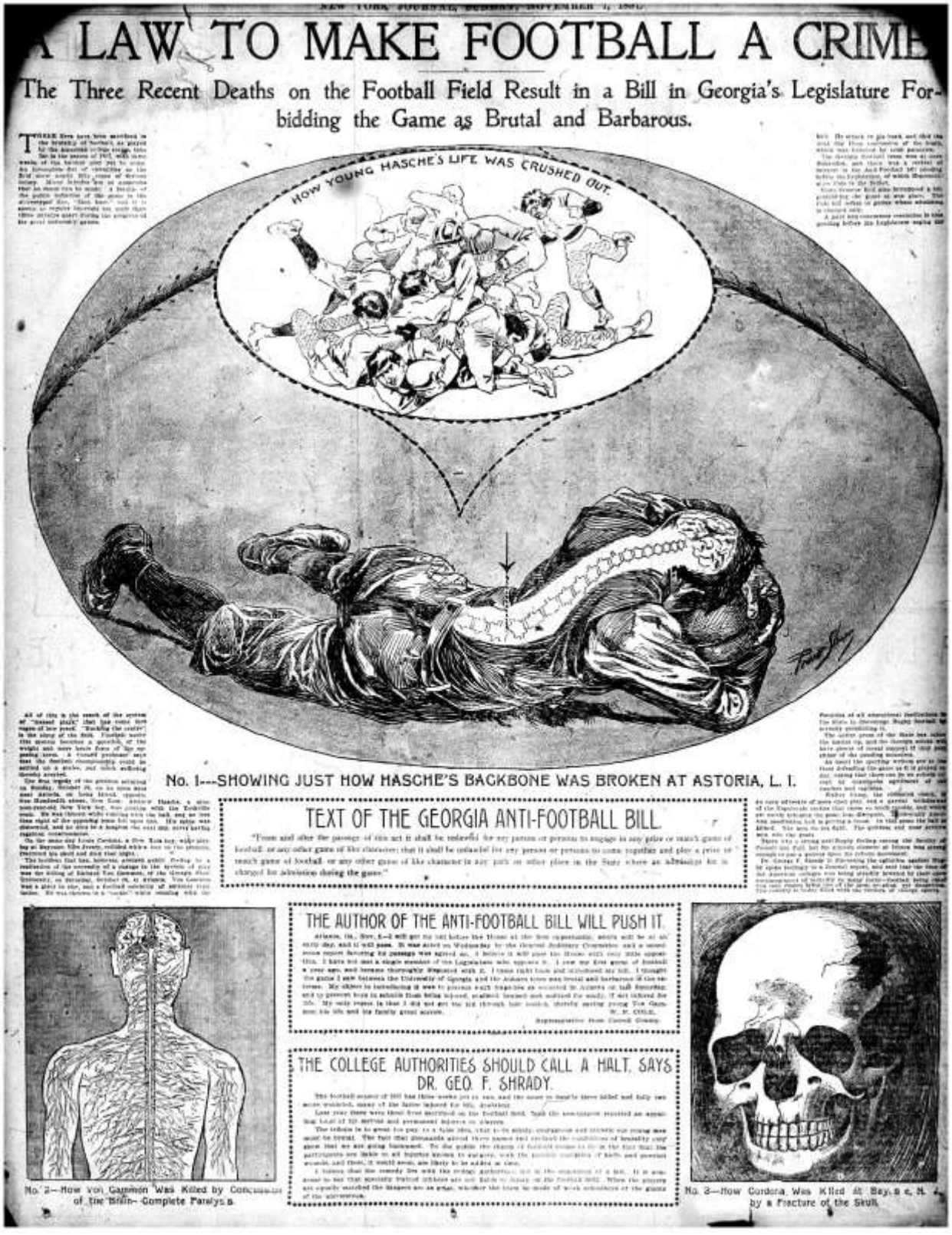


Figure 5. *New York World*, November 7, 1896.

The 1905 crisis over football brutality, which has become a part of the current conversation about concussions, was actually the culmination of a continuous near-crisis dating from the 1880s, with some major eruptions along the way. The 1897 season was a particularly high (or low) point, when a series of fatalities prompted a few schools to drop the sport and nearly led the Georgia legislature to ban football throughout the state. Only a published plea to the governor from the mother of Von Gammon, a young man who had died from a head injury in the Georgia-Virginia game—that "it would be inexpressibly sad to have the cause he held so dear injured by his sacrifice"—saved football in Georgia.[7]

Coverage of these incidents in the press, especially the Pulitzer and Hearst papers in New York, was outlandish, even by the yellow-journalism standards of the day (*Figures 6 and* 7). Critics of football's violence also criticized this "newspaper sensationalism," and from the evidence it seems that the game was in fact not as



A LAW TO MAKE FOOTBALL A CRIME

The Three Recent Deaths on the Football Field Result in a Bill in Georgia's Legislature Forbidding the Game as Brutal and Barbarous.

HOW YOUNG HASCHE'S LIFE WAS CRUSHED OUT.

No. 1---SHOWING JUST HOW HASCHE'S BACKBONE WAS BROKEN AT ASTORIA, L. I.

TEXT OF THE GEORGIA ANTI-FOOTBALL BILL

THE AUTHOR OF THE ANTI-FOOTBALL BILL WILL PUSH IT.

THE COLLEGE AUTHORITIES SHOULD CALL A HALT, SAYS DR. GEO. F. SHRADY.

No. 2—How Von Gammon Was Killed by Concussion of the Brain—Complete Paralysis.

No. 3—How Cordora Was Killed At Bayside, N. Y., by a Fracture of the Skull.

Figure 6. *New York Journal and Advertiser*, November 7, 1897.

Figure 7. *New York World*, November 14, 1897. Notice the continuing comparison of football to prizefighting in the comments of the current heavyweight champion, "Gentleman Jim" Corbett, at the bottom.

violent as the press portrayed it (nor as dangerous as it is today). The popular press proved to be a questionable friend of the new college game, popularizing it but also exaggerating its brutality.

While the press was sensationalizing football's violence, it was also sensationalizing the game itself—its players as larger than life, the contests as momentous as the epic battles of ancient warriors. Here is Hearst's *Journal* on the atmosphere at the 1896 Yale-Princeton game at New York's Manhattan Field (*Figure 8*):

> There was yesterday an uproar continuous, unremitting, cut by college cries, pierced by the tunefulness of tin, rent by the riot of rattles, an uproar in which the shriek of the elevated's engines sank away subdued and hushed. A dozen bull fights in the bloodiest heart of goriest Andalusia, fused and amalgamated, would be less deafening. A wilderness of gorillas doing up a desert of panthers would create less noise. It was immense, indeed. It was more. It was a convulsion of nature, domesticated into a national game; one at which any vagrant from sedater spheres, would have sat appalled—until it took him, as it would have, straight back to the good old days of gladiatorial Rome.
>
> For it was that. It was Roma redivivus, transplanted, translated, adapted, and brought up to date. There were vestals and senators, patricians and plebs, and in the arena twenty-two demons at work.[8]

NEW YORK JOURNAL

NEW YORK, SUNDAY, NOVEMBER 22, 1896.—44 PAGES.

TIGERS' CRUSHING BLOW TO YALE'S GREAT RECORD.

PRINCETON, 24;
YALE, 6.

LINE-UP AND SUMMARY.

THE INJURED PLAYERS.

Exact Nature of the Men's Hurts as Described by the Journal's Surgeons.

Old Nassau's Giants Plough Through the Line of the Blue and Her Runners Are Aided by Perfect Interference.

WINE FOR TIGERS; BEER FOR YALE

And in Various Other Bubbling Ways the Sons of Nassau and Eli Celebrated Triumph or Drowned Sorrow.

ROME BROUGHT UP TO DATE.

Gladiators Battling in an Arena Before Patricians and Plebeians.

T. L. SMITH, PRINCETON'S QUARTER BACK, WHO MADE THE SENSATIONAL PLAY OF THE DAY.

Figure 8. *New York Journal*, November 22, 1896. The illustration of the Princeton quarterback, astride the entire page, cast him literally larger than life.

What reads today like parody was routine for the season's big games. The sub-headline, "Gladiators Battling in an Arena Before Patricians and Plebeians," invoked a favorite football trope. The football gladiator (*Figure 9*) perfectly captured the ambivalence of a modern era uneasy about modernity: an icon of primitive brutality rightly banished from civilized modern life but still needed.

The "football gladiator" may have been more about selling newspapers than explaining the new sport, but readers discovering the game in print rather than in the grandstand came to understand football as they found it. "Newspaper sensationalism," when not in crisis mode, served the interests of the game's champions, not just the promoters and organizers and others who reaped profits but also its ideological defenders, those who saw football as a tonic for an effeminizing culture and an emasculating civilization. Football quickly acquired a quasi-epic aura. And what made football brutal also made it heroic; what made football heroic also made it brutal.

This is history's fundamental lesson for those who would make the game safer today.

Figure 9. One wonders whether readers turning to this full-page, full-color "Modern Gladiator" in the Sunday supplement of the *New York Herald* on November 29, 1896, were thrilled or appalled.

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The most prominent football champion in the early years of the twentieth century occupied the White House. Theodore Roosevelt had, famously, been a sickly child who built himself up through exercise, sport, and an extended postgraduate adventure in the Wild West. When he formed his company of Rough Riders for the country's little adventure in Cuba in 1898, he (again famously) filled the regiment with cowboys and college athletes as the best of American manhood. And he wrote frequently about the value of rough sport as a substitute for the rugged outdoor life no longer available to most Americans. Whether writing for children in *St. Nicholas* magazine or adults in *Harper's Weekly*, Roosevelt urged them toward a "strenuous life," with "manly sport" as ideal training for "the rough work of the world."[9]

In June 1905 at Harvard, his alma mater, Roosevelt gave a commencement address that would be quoted repeatedly during the following football season. His comments about football were a small part of his talk on the "Harvard Spirit," but they were the part that was remembered. "I believe heartily in sport," he told the graduates, taking on the game's critics, "I believe in outdoor games, and I do not mind in the least that they are rough games, or that those who take part in them are occasionally injured. I have no sympathy whatever with the overwrought sentimentality which would keep a young man in cotton wool, and I have a hearty contempt for him if he counts a broken arm or collar bone as of serious consequence when balanced

against the chance of showing that he possesses hardihood, physical address, and courage."[10]

Like football's other advocates, Roosevelt distinguished mere brutality—especially when "coupled with a low cunning in committing it without getting caught by the umpire"—from the roughness that builds character. And the president was less concerned about football's violence than the "furtive" professionalism of a supposedly amateur sport (as opposed to the honest professionalism of actual pro athletes like his sparring partner in the White House, a former prizefighter named Mike Donovan). But it was his comments on broken collarbones as the necessary cost of football's man-making benefits that would resonate during the 1905 football season.

The "professionalism" that troubled the sportsman-in-chief—"tramp athletes," secret payments, athletes who were "students" in name only—was the subject of a pair of muckraking articles in *McClure's* magazine that summer. Calls for reform were in the air again when the new football season opened with the usual violent incidents. Summoning the coaches and athletic directors from Harvard, Yale, and Princeton to the White House, Roosevelt won from them a pledge to make the game less violent, lest the public demand getting rid of it altogether. After a rather innocuous press release from the football leaders (including Walter Camp), the press saluted Roosevelt for taming the "Football Slugger" (*Figure 10*).

Figure 10. In the humor magazine *Judge* (November 4, 1905), the Football Slugger joined the menagerie of unruly beasts Roosevelt had tamed.

The president didn't threaten to abolish football, as is sometimes claimed; he had no power either to end it or preserve it. Rather, from his bully pulpit he urged those who did have the power to act before the popular outcry grew too loud. But the coaches' pledge had no discernible impact on the field. In early November heavyweight champion Jim Jeffries (the future Great White Hope) issued a new attack on college football from the world of prizefighting (*Figure 11*). A week later, after a Harvard player was ejected for slugging a

Penn opponent, Roosevelt summoned Harvard's coach to the White House for a private tongue-lashing. For the public, the fact that the


CAN A GENTLEMAN PLAY FOOTBALL?

"Football Is Far More Brutal than Prize-Fighting—I Don't See How Any Gentleman Can Feel at Home in the Game. I Wouldn't Go Into It for a Thousand Dollars a Minute."
J. J. JEFFRIES, Champion Pugilist.

"Football Deserves the Name of King of Sports. It Represents a Superior Method of Training Vindicated by the Collegian's Condition in After Life."
"TEXAS" CHARWATE, Yale '08.

What President Roosevelt Thinks of Football Brutality.

In a Football Line-up Like This—Prize Fighters Against College Men—Which Do You Think Would Win?

FOOTBALL PLAYER'S PUNISHMENT TWELVE TIMES AS LONG AS PUGILIST'S

FOOTBALL'S HARVEST OF DEATH AND WOUNDS SINCE 1900.

Figure 11. This page from Pulitzer's *New York World* (November 5, 1905) encapsulates the state of football controversy on the eve of the game's first full-blown crisis: Jeffries's testimonial, with sidebars on the president's justification of football's roughness and "Football's Harvest of Death and Wounds Since 1900."

president's son Ted was an undersized end on the Harvard freshman team added family drama to the usual newspaper sensationalism—particularly after the boy was badly beaten in the Yale game in November. How did the defender of broken collarbones in a noble cause feel when they belonged to his own child? (*Figure 12*). At the Harvard-Yale varsity game a week later, a Yale player's vicious hit on a Harvard man making a fair catch, sending blood spurting from his nose as the referee stood nearby and did nothing, outraged Roosevelt again.[11]

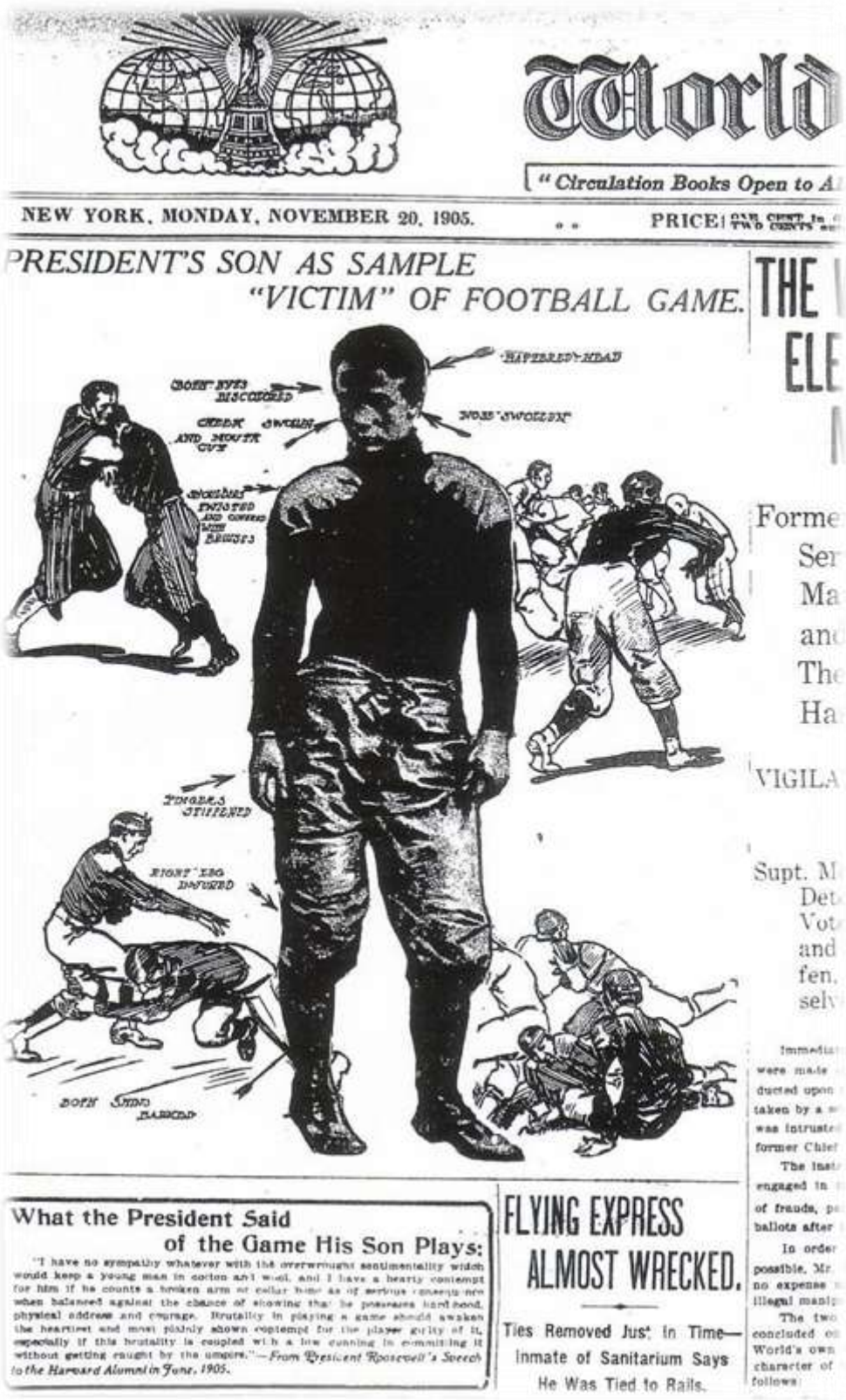

Figure 12. The *New York World*'s illustration of Junior's injuries, accompanied by Senior's words at Harvard in June.

The mild uproar over these incidents would have passed once more, without consequences, had a halfback for Union College, Harold Moore, not died after a head-on collision on the same day that Harvard played Yale. The Big Game drew the major reporters, but Union's opponent was New York University, and the game was played in the media capital. The next day in chapel, NYU chancellor Henry MacCracken told the students that he would urge the trustees to drop football. Uptown, Columbia's president and faculty committee made the same decision. MacCracken then invited NYU's football opponents from previous years to send representatives to a conference to determine a course of action. Twelve showed up, making thirteen with NYU. Five voted to abolish football, eight to reform it. Whether the game's survival actually hung on this vote is doubtful; the football elite—Harvard, Yale, and Princeton—did not participate. But everyone agreed that radical reform was necessary. In late December MacCracken convened representatives from about sixty institutions for a second meeting, out of which came the Intercollegiate Athletic Association of the United States. (In 1910 the IAAUS, much expanded, would rename itself the National Collegiate Athletic Association.)

Over the winter of 1905–1906 three separate groups—the new organization's committee, Walter Camp's existing committee, and Harvard's own—worked independently to make football safer, eventually agreeing on a set of rules that brought the game closer to what it is today. They created a neutral zone between the opposing lines (to reduce slugging), increased the yards needed for a first down from five to ten (to make line smashes less effective), limited the number

of men in the backfield to five (to weaken mass-momentum plays), and shortened the game from seventy minutes to sixty (to reduce fatigue). Most important, they legalized the forward pass, though with major restrictions: the passing team lost the ball if it hit the ground before touched by a player, or if touched by any offensive player except for the two ends, or if thrown from within five yards on either side of the center, or if passed over the goal line. These rules seem bizarre now, but for the time they made sense. No ball had ever been thrown forward in any kind of football played anywhere in the world. This was uncharted territory.

Journalists welcomed the new rules, though sometimes with reservations, and most of them declared the 1906 season an improvement in both safety and enjoyment ("open" football was more appealing to fans as well as presumably safer for players). The most revealing responses, however, came from the humor magazines (*Figures 13, 14, and 15*). Whether these cartoons mocked those who would emasculate football or those who feared its emasculation, they touched on the desire for a safer game—just not *too* safe.

Figure 13. In January 1906, when the reform movement had just started, *Puck* imagined a new football played by fops rather than virile young men.

FOOTBALL IN 1906 UNDER THE NEW RULES.

Figure 14. In March 1906, with the rules committees considering various options but not yet settled on any, *Judge* imagined the coming season's game between Yale (in powder blue) and Harvard (in pink and represented by a bespectacled figure with striking resemblance to the current occupant of the White House).

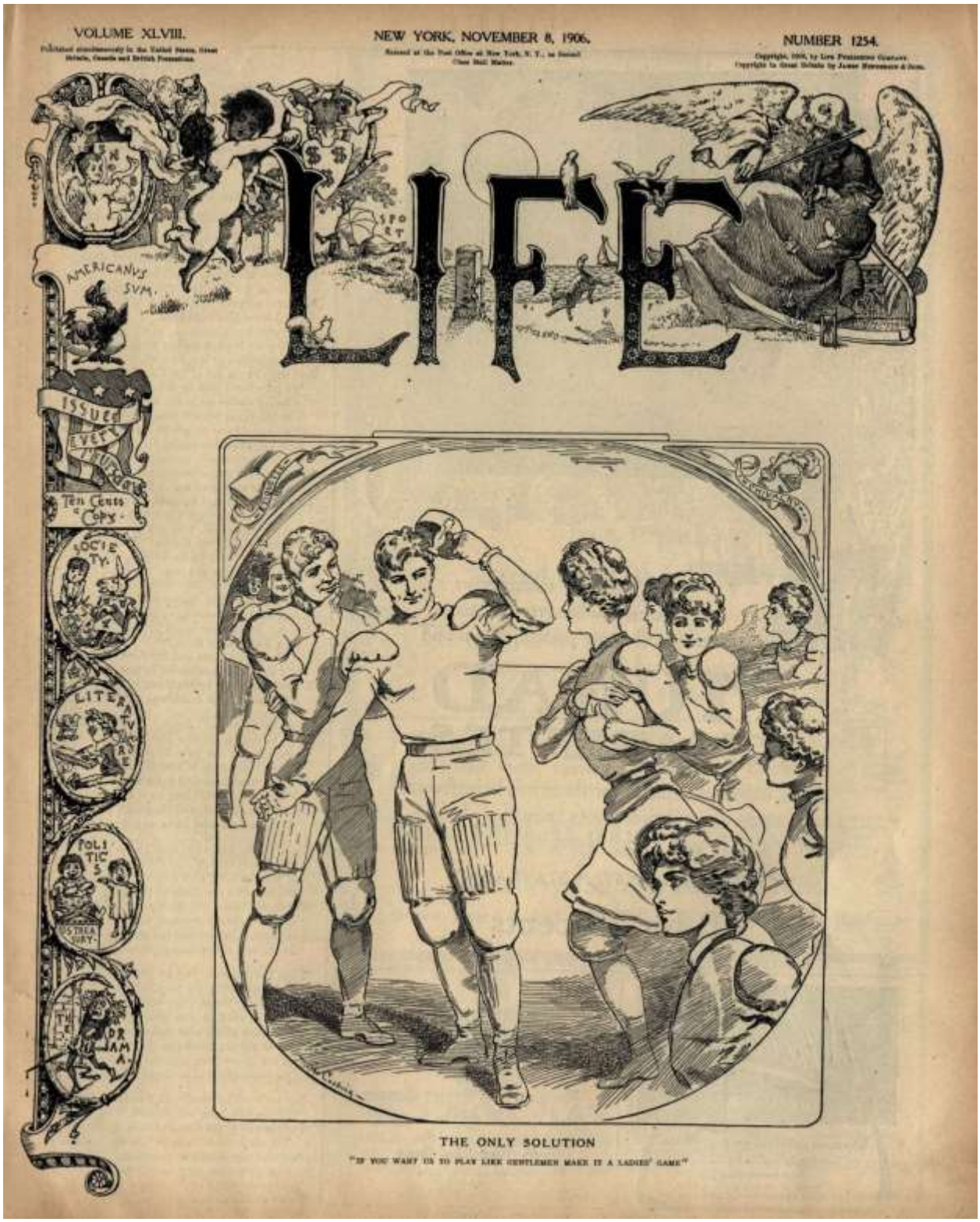

Figure 15. And in October 1906, with the new rules now in place, *Life* came up with a less clever satire on the same emasculated game.

Football did, in fact, seem safer under the new rules: from 18 deaths (mostly in sandlot games) in 1905, the carnage dropped to 11 in 1906 and 1907, then to 13 in 1908. But the next year the toll jumped to 26, ten of them college players, to trigger less a new crisis than an aftershock. In response, the rules makers lifted some of the restrictions on passing; limited backfield men to four, only one of them allowed in motion and no longer forward; widened the neutral zone to a full 12 inches; divided the game into 15-minute quarters; and banned flying tackles, "locked interference" (blockers linking arms), and pushing or pulling the runner. Two years later they completed the transition to the game we'd recognize today by adding a fourth down to gain ten yards, increasing the points for a touchdown from five to six, and dropping still more of the constraints on passing. They also reduced the length of the field from 110 to 100 yards, with end zones now, into which passes could be thrown without penalty, and they specified dimensions for a narrower, more tapered ball (not many spirals had been thrown with what was essentially a rugby ball). The forward pass could now be more than a desperate gambit. And the rationale was clear: opening up play, through more passing, would make it safer.

Maybe.

III: Protecting the Head

Head-on collisions, like the one that killed Harold Moore, were always unintentional: in the era before helmets the players did whatever they could to protect their heads. "Slugging," for all the ethical outrage it prompted, was a prudent alternative to butting with the head. Players "interfered" (blocked) and tackled with their arms, chests, and shoulders. Pushing and pulling the ball carrier remained legal for many years.

With the advent of flying tackles and mass-momentum plays, protecting the head became a greater challenge. While players could sew a bit of padding into the shoulders of their jerseys, the best they could do initially for their exposed heads was to grow their hair long. The mop-topped football player of the 1890s was an easy target for cartoonists (*Figures 16 and 17*).

Figure 16. *Puck*, November 30, 1892.

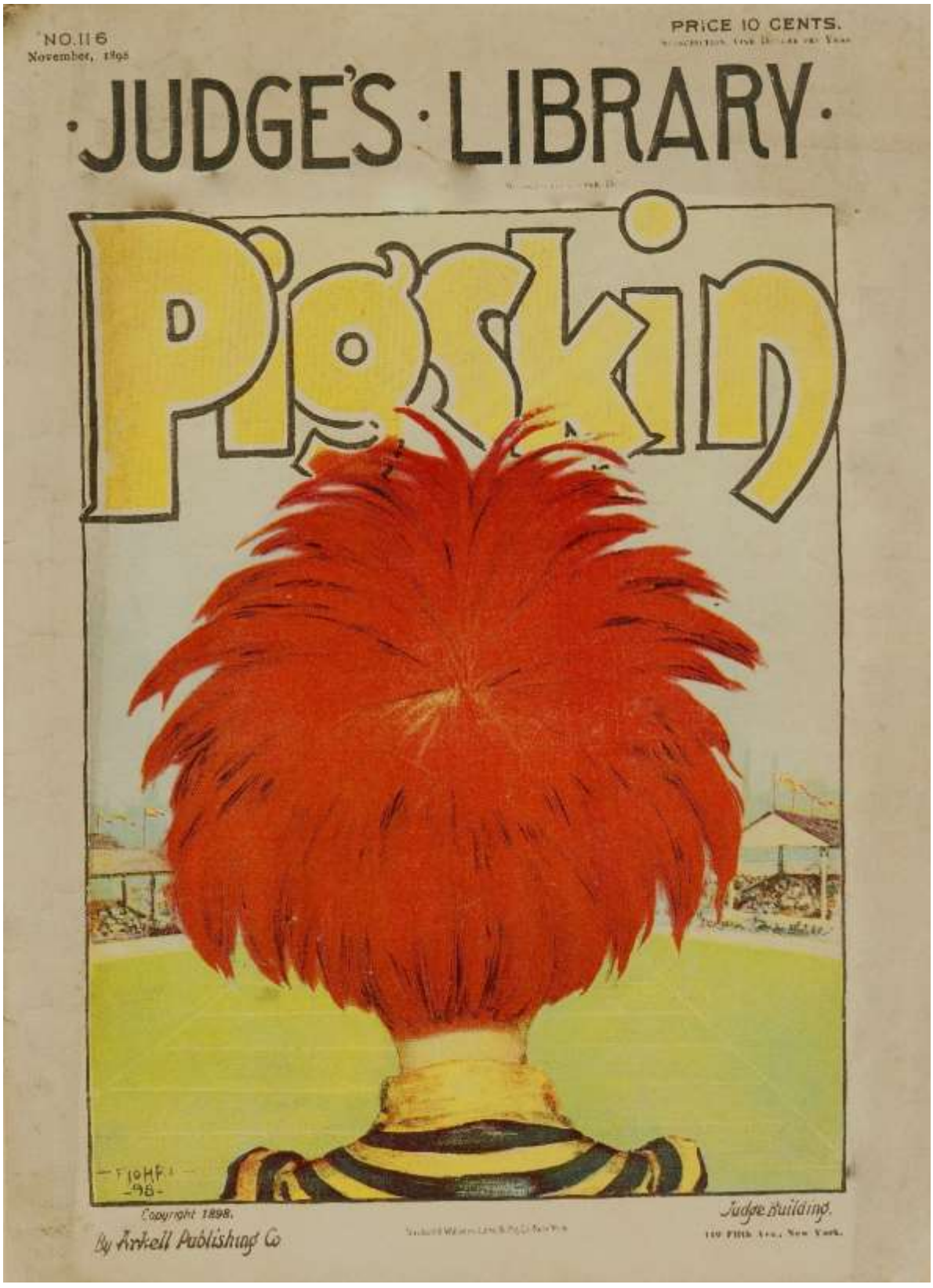

Figure 17. *Judge's Library*, November 1898.

More protection was obviously needed, and satiric cartoons of the football player of the future in full armor were not far off the mark from what fully padded and helmeted players would eventually become (*Figures 18 and 19*). But it would take a long time to get there.

Figure 18. *Harper's Weekly*, November 16, 1889.

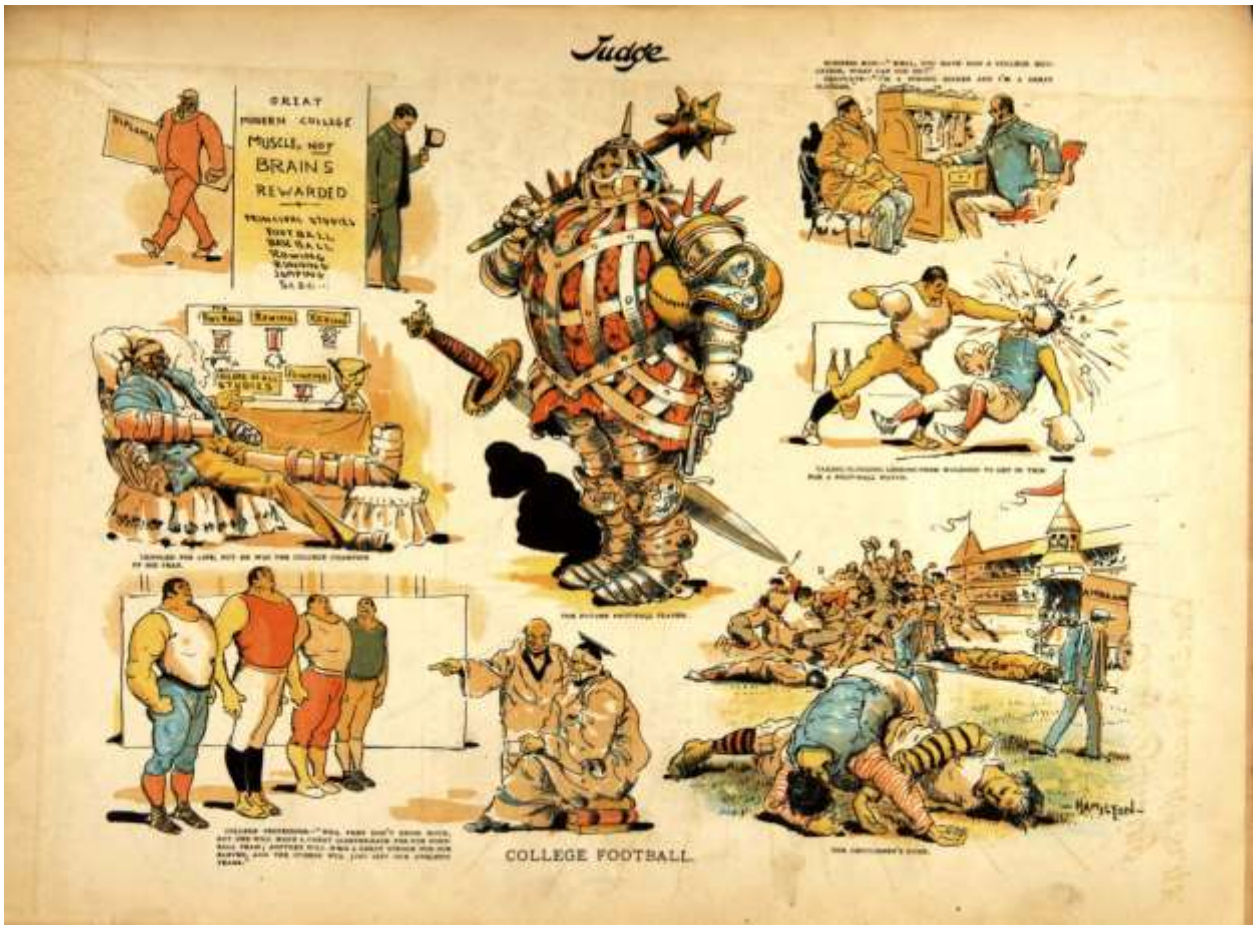

Figure 19. *Judge*, November 21, 1891.

The first piece of manufactured football equipment was a nose protector, a sort of leather cup strapped over the nose, with holes for breathing and an extension held between clenched teeth (*Figure 20*). To wear one, a player had to want to protect his nose pretty badly, because the device blurred his vision and inhibited his breathing. It also made him look ridiculous: photographs appear as bizarre as the cartoons (*Figures 21 and 22*). Enterprising players looked for more help. The first headgear was a simple cap of leather straps, made either by a shoemaker for Navy's Joseph Reeves in 1893 or by a harness maker for Lafayette's George Barclay in 1896 (accounts

differ). The first helmets manufactured by the Spalding company in the 1890s were also little more than leather straps or skullcaps (*Figure 23*). Later models (in "dog ear," "flat top," and "beehive" designs) covered more of the head without providing obviously greater protection (*Figures 24 and 25*). The addition of interior suspension in 1917 to cradle the skull within the helmet created a standard that lasted through the 1920s and '30s.[12] But it still provided minimal protection.

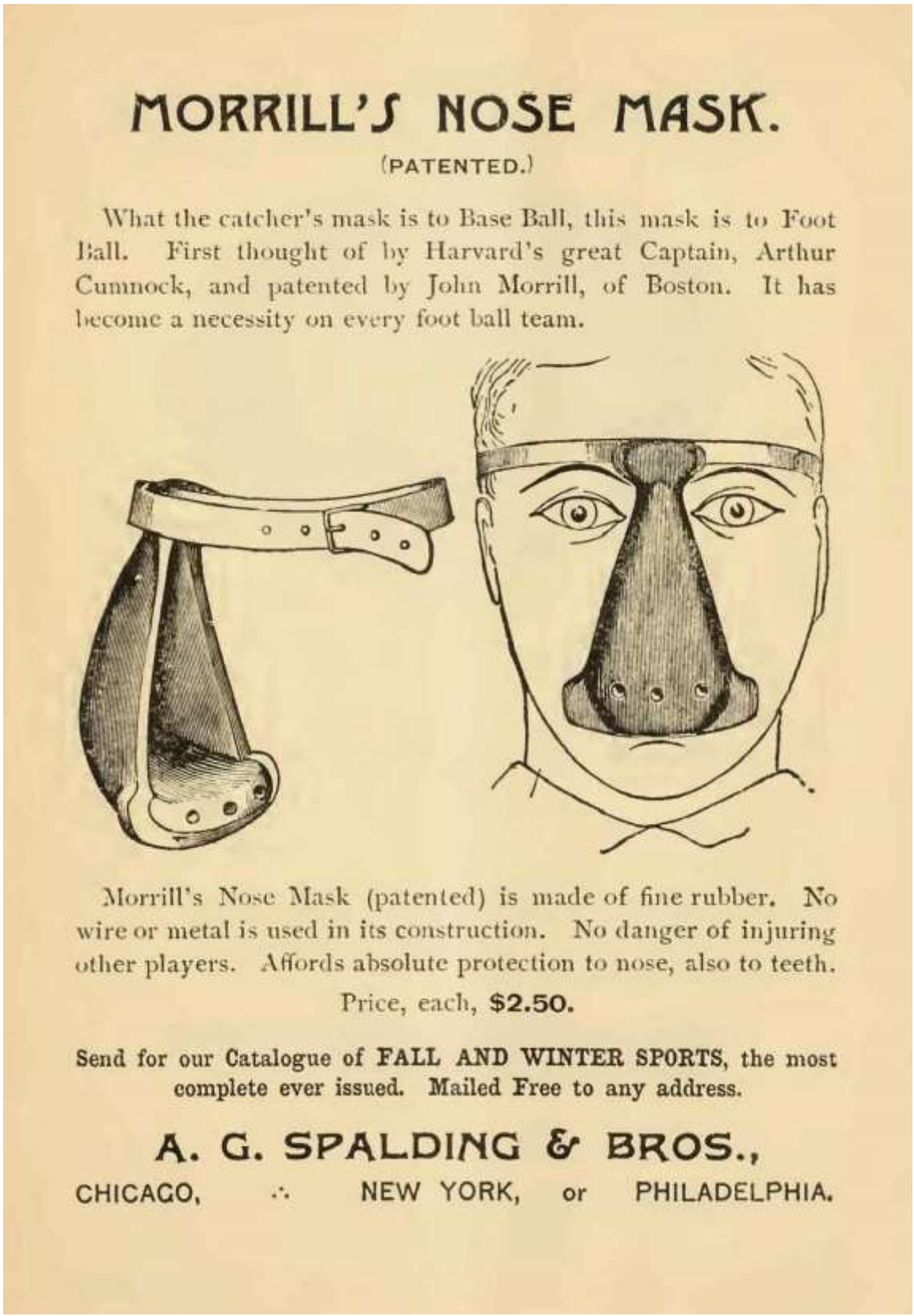

Figure 20. Ad from 1893 *Spalding's Official Football Guide.*

Figure 21. *Leslie's Weekly*, November 5, 1905.

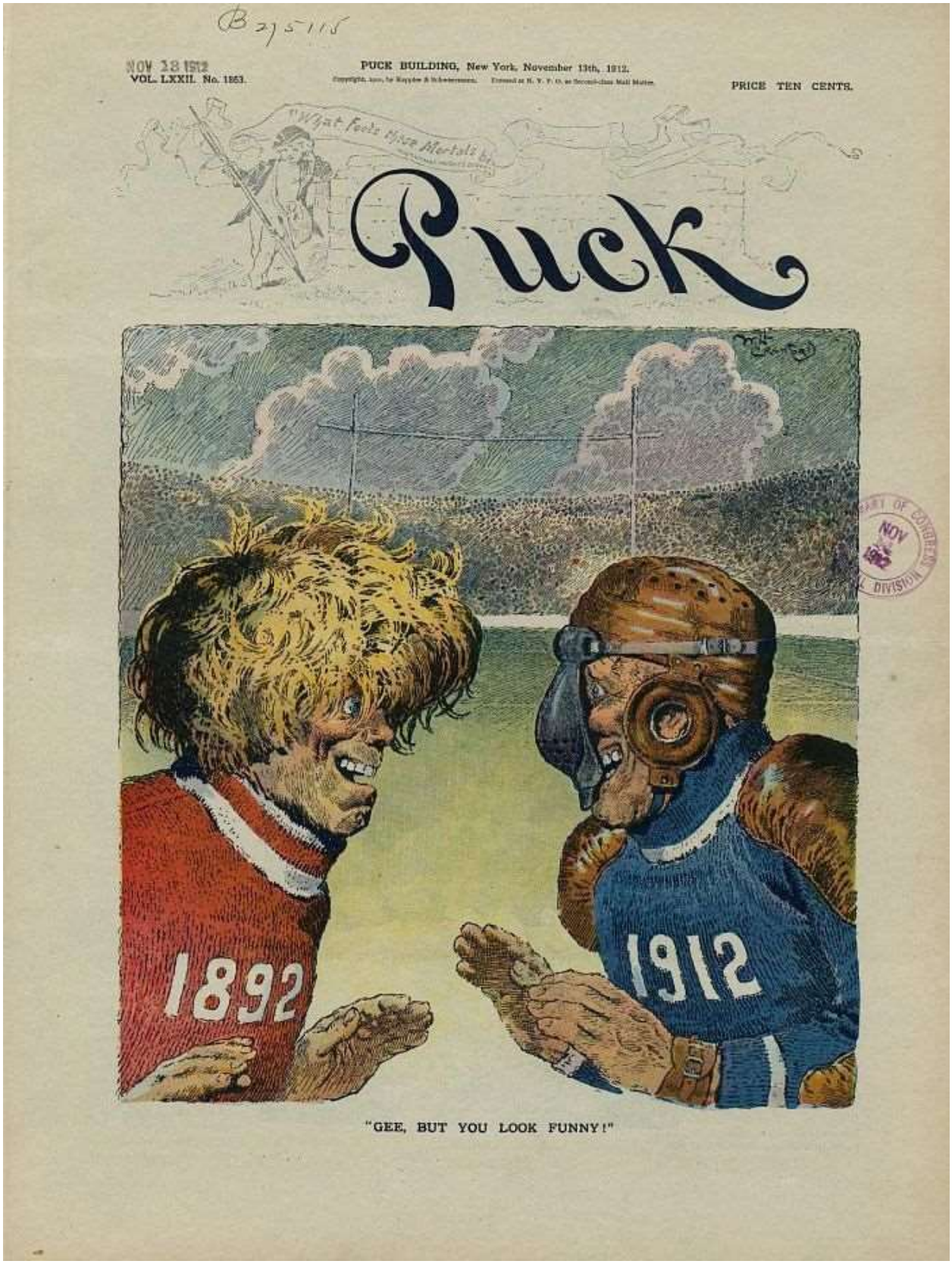

Figure 22. *Puck*, November 13, 1912.

A. G. SPALDING & BROS NEW YORK AND CHICAGO

SPALDING'S FOOT BALL GOODS

Spalding's Special New Head Harness

Heavy sole leather crown, filled with air holes and lined with lamb's wool padding. Ear protectors heavily padded with felt. Used by the leading colleges, and is the best and most practical head harness yet made.

No. **50.** Each, **$4.00**

Spalding's Head Harness

(PATENTED.

This style head harness is the lightest and most comfortable to wear of any head guard yet devised. It is made of tan leather and thoroughly padded with wool felt a half-inch thick, with an elastic to go under the chin, and is adjustable to any size head. It is a thorough protection to the crown and back of the head, also to the ears.

No. **35.** Each, **$2.25**

Spalding's Elastic Bandage

Composed of threads of rubber completely covered. Light, porous and easily applied. The pressure can be applied wherever necessary, following all depressions or swellings with folding and unvarying uniformity. Quickly secured by inserting end under last fold.

No. **25.** Width 2½ in., 5 yards long (stretched), **$ .75**
No. **30.** Width 3 in., 5 yards long (stretched), **1.00**

Foot Ball Belts

1½ in., heavy leather. New style nickeled harness buckle. Colors: Tan, Orange or Black.
No. **728.** Each, **50c.**

1½ in., Nickel Harness Buckle. Colors: Tan, Orange or Black.
No. **735.** Each, **25c.**

Spalding's Foot Ball Shin Guards

IMPROVED PATTERN

No. **8.**	Canvas, length 9 inches,	Per pair,	$ .50
No. **9.**	Canvas, length 12 inches,	"	.75
No. **10.**	Canvas, length 12 inches,	"	.90
No. **20.**	Moleskin, length 12 inches,	"	1.15
No. **30.**	Leather, length 12 inches,	"	1.35

Spalding's Elastic Foot Ball Belt

Our elastic belts stretch with the length of body and may be attached to jacket and pants, thus forming one continuous suit. By closely fitting the body the opposing player has less chances for tackling. They allow perfect freedom in all positions.

No. **1.** Width 6 inches, Each, **$2.50**

Spalding's Elastic Supporter

No. 2 No. 1

No. **2.** With elastic pieces on side Each. **50c.**
No. **1.** Made of best Canton flannel, one in box, **25c.**
No. **X.** Same style as No. 1, not boxed, **15c.**

Bike Jockey Strap Suspensory

For cyclists, athletes, base ball, foot ball, tennis players, etc. All elastic, no buckles. Clean, comfortable and porous. Three sizes: small, to fit waist 22 to 28 inches; medium, 30 to 38 inches; large, 40 to 48 inches.

No. **5.** Each, **75c.**

ILLUSTRATED CATALOGUE OF SPORTS MAILED FREE

A. G. SPALDING & BROS. NEW YORK CHICAGO DENVER

Figure 23. Spalding's Official Football Guide, 1899.

Figure 24. Spalding's Official Football Guide, 1912.

Figure 25. Spalding's Official Football Guide, 1922.

*

With their heads vulnerable, players avoided head-on collisions, but some were unavoidable. Football's next major crisis could have erupted in 1931 when Army cadet Richard Sheridan was fatally injured in a game against Yale on October 24. As in the case of Harold Moore in 1905, the game was played in New York, this time, though, as one of the week's big games, in the presence of writers from the major New York newspapers and wire services. Still, no crisis followed. Headlines and heart-tugging stories quickly gave way to routine coverage of the next weekend's contests. The Sunday headline of the *New York Daily News*, for example, was "Sheridan's Neck Broken in Tackling Eli Runner." Monday headline: "Mechanical Lung Keeps Cadet Sheridan Alive!" Tuesday headline: "Injured Army Football Player Dies with Mother at His Side." Come Wednesday, it was on to Fordham's and NYU's upcoming games.

After the 1931 season concluded with a reported forty deaths (thirty-one by later official count), journalists weighed in with recommendations for rules changes and better medical care, but then moved on. No push to change football radically, let alone abolish it, came from inside or outside the game's establishment. The obvious explanation is that by 1931 college football was too important to too many powerful institutions (including the media) in too many ways to change the game radically, let alone abolish it.

College football had grown steadily in the years preceding the First World War, then boomed in the 1920s, the so-called Golden Age of

Sport. Attendance in the massive concrete-and-steel stadiums that popped up across the land, together with hugely increased attention from the mass media (now including radio and film), created a twenty-million-dollar entertainment business as well as a powerful cultural and social institution. While baseball remained the national pastime, big-time college football—with its marching bands, mascots, and cheerleaders nearly as important as the action on the field—was the country's greatest sporting spectacle.[13] And while Major League Baseball had clubs only in the East and upper Midwest, college football represented all regions and states, competing against one another for national recognition. High school teams in small towns played the same role at the community level. The fact that high school and college players were "our boys" competing for the honor of school or community put school football at the center of local identity and pride. (Professional football also began as a mostly small-town affair but with rivalries more important for wagering than for tribal identity.)

College football's first full-blown celebrities, Red Grange and Knute Rockne, appeared in the 1920s. Football stars and famous coaches had preceded them, but the new media and expanded old media made Grange and Rockne truly national figures who transcended their sport. (Both of them appeared on the cover of *Time*, the decade's new weekly news magazine, Grange in 1925 and Rockne in 1927.) Sports coverage in daily newspapers doubled over the course of the twenties. Weekly magazines like the *Saturday Evening Post* and *Collier's*, with circulations in the millions, had regular fall features and short

stories about college football. Commercial radio appeared in 1920 and began covering local college games a year later; the first radio networks in 1926 brought the biggest games to a national audience. By the end of the decade more than a third of American homes had radio sets, and on fall Saturdays it was hard to find anything on them but college football.

In the new movie theaters, newsreels preceding the feature films (several of them football dramas or comedies each year) played a key role in elevating Grange and Rockne to national celebrity. In 1924, newsreel cameras allowed fans nationwide, not just the sixty thousand at the new Memorial Stadium in Urbana, Illinois, to see Grange's six-touchdown performance against Michigan. Rockne had no comparable breakout moment before the newsreel cameras, but he was like the kid always ready to ham it up when a camera is pointed at him. To the abundance of surviving film footage of Rockne, which plays so wonderfully in documentaries, we owe his genius for self-promotion. Rockne understood and exploited the power of the media better than any football coach before him, creating the model of the entrepreneurial coach so familiar today.[14]

Every new information and entertainment medium in the United States has embraced sport for its predictable schedules, dramatic content, and audience appeal. By 1931 all the media, old and new, depended on college football to attract readers, listeners, and viewers. In 1905, sensationalizing violence, whatever the consequences, helped Pulitzer and Hearst sell newspapers. By 1931 the media needed football for the long haul.

As football boomed in the twenties and became more deeply embedded in American life in the thirties, it retained its powerful link to masculinity through physical and mental toughness. Grantland Rice, the era's foremost sportswriter, wrote about football players having "The Stuff Men Are Made Of." Princeton's famously hard-nosed coach Bill Roper emphasized the "whole-hearted abandon to 'take it'" as the quality that made football players the antithesis of "Soft Men." Red Grange's coach at Illinois, Robert Zuppke, declared football an emphatically "masculine game" whose players were "blood brothers of the hardy adventurers, pioneers and explorers of old." Knute Rockne contrasted football players to the "powder puff youths" and "rumble seat cowboys" who jeopardized the country's future. Football's roughness was essential.[15]

True, some ripples followed Cadet Sheridan's death. Before 1931 the number of football fatalities each season was compiled by newspapers like the *New York Times* from wire-service reports. In 1931 the American Football Coaches Association began tracking deaths more systematically (an undertaking continued today by the National Center for Catastrophic Sport Research at the University of North Carolina). Women's magazines in the 1930s published articles with titles like "Making Football Safe" and "How Dangerous Is Football?" One of these, "Death on the Gridiron" by sportswriter Bob Considine in *Parents' Magazine* in 1936, opened with this little scenario:

> A lazily tumbling football will drift down out of the air some afternoon this fall, and your son, or mine, will catch it, clutch

> it dearly to his chest, and take the last few steps of his life. Somewhere between the point at which he caught the ball and the goal which the rules of the game command him to attain, he will be brutally hit by one or more tacklers and thrown heavily upon the unyielding ground. The crash may crush the very framework of his body, or in the ensuing pile-on he may be kicked in the temple or the spine. If the accident happens in a little town, he will be rushed in some bouncing, honking automobile to a hospital cot, there to die in a little while in a haven ill-equipped to combat such unique visits of death. If he is mortally wounded in a great game, as was Cadet Richard Sheridan in the Army-Yale game a few years ago, the full forces of medical science will be summoned to his aid. He will be placed in a grim steel box called an artificial lung, whose wheezes and puffs are dreadful enough in their own right. But soon the mechanized sighs will flutter and be no more, and he, too, will have added his name to the long list of youths of America who have given up their lives in a game long romanticized beyond its intrinsic value.[16]

According to Considine, this awful drama would play out thirty or forty times that season, with half the "doomed kids" playing in high school. But having terrified millions of mothers and challenged football's "intrinsic value," Considine then proceeded to assure them—as all of these articles did—that their sons would be just fine so long as they kept good habits, were properly outfitted and coached,

played on proper fields with decent facilities, and enjoyed medical supervision.

How dangerous was football, actually? After Sheridan's death in 1931 a few researchers tried to find out. In October 1933 the major journal for physical educators published studies of high school football players in California and Massachusetts. Twenty-two percent of the players in California had been injured during the 1932 season, and a third of the injuries were serious enough to require inactivity for several days. These included five skull fractures and 58 concussions (one for every 234 players), 15 of them classified as "more serious." A survey of two-thirds of the high schools in Massachusetts for the seasons 1929 through 1932 found half the number of injuries documented in California but about the same rate of concussions (roughly one in 250). Both studies concluded that the rate of serious injuries was not very high.[17]

Concussions in general were not believed to be serious. The same year these studies appeared, Mal Stevens, a football coach at Yale and NYU in the 1930s who happened to be an orthopedic surgeon, co-authored a book, *The Control of Football Injuries*, in which he defined a concussion as a head blow that made a player briefly "dazed" or "goofy," caused "ringing of the head," or knocked him out. All these symptoms, including brief unconsciousness, were "temporary cerebral disturbances" that might not even affect the ability to continue playing but could result in an "inability to remember at the end of the day, or the next day, activities during or following the game." Stevens warned that concussions were more common than generally

recognized but added, "It is well to emphasize the fact that concussions and fractured skulls per se are not particularly dangerous and do not have deleterious after-effects unless there has been brain (cortical) damage with sub-dural or extra-dural hemorrhage."[18]

This statement, ludicrous in light of recent research, expressed a consensus among medical experts into the 1970s, perhaps even the 1980s. Brain hemorrhages could be fatal; otherwise, concussions were "not particularly dangerous." (A 1950 survey of ten years of athletic injuries in Kansas high schools categorized concussions, whose rate was consistent with the studies from the 1930s, with bruises that required time to heal but were not serious enough to inhibit participation.[19])

Protecting against the few lethal head blows was the primary purpose of helmets. Most players wore them by the 1930s, but the NCAA did not require them until 1939, the NFL until 1943. The flying hair of the occasional helmetless player in photographs from the thirties hints at either an assertion of toughness or a sense of freedom that offset the risks. In 1939 the John T. Riddell Company of Chicago brought out a plastic helmet with interior webbing, the first significant advance in helmet technology since the 1910s. A year later Riddell added a chin strap (to replace the standard strap that choked the Adam's apple) and the first plastic facemask. At the time no one foresaw that the hard-shell helmet would become football's most lethal weapon.

IV: The Head as Weapon

The hard-shell helmet did not instantly change football. Initially the plastic was too brittle; helmets sometimes cracked on impact, and facemasks broke off. The NFL actually banned plastic helmets in 1948, only to allow them back a year later. Leather helmets continued into the 1950s—I wore one as a high school freshman in 1962, though that was because my Jesuit high school could not afford new equipment—but by the mid-fifties the technology had improved enough to make the hard-shell plastic helmet, with suspension webbing and a single-bar rubber-and-plastic facemask (introduced by Riddell in 1955), the new standard. Double- and triple-bar facemasks, as well as various cages, soon followed.[20] Players' heads and faces were now better protected than they had ever been. Coincidentally, professional football finally emerged as a major national sport.

Football had begun as a school sport, with secondary schools following the colleges' lead. Altogether different from baseball, football's perceived virtues were tied to its role in educating boys and young men. (Its perceived vices undermined that role). Football's roughness, within the rules, was character-building for schoolboys; for professionals it was merely brutal and mercenary. Professional football began when athletic clubs in the 1890s hired college players as ringers; the game developed in the small industrial towns of Ohio in the early 1900s. The organization that became the National Football League was founded in 1919 with clubs representing Akron, Canton, Columbus, Dayton, and Rochester. Teams came and went

through the 1920s and early 1930s, depending on precarious finances, as pro football was mostly ignored by the rest of the country and occasionally vilified as a perversion of the college game. After the exposure of ringers from Notre Dame and Illinois in a high-stakes game between rival Illinois towns in 1921, the Big Ten banned anyone associated with pro football from ever coaching, refereeing, or having any other role in its conference games. Red Grange's turning pro in 1925 immediately after his last college game thus shocked the collegiate world and brought unprecedented attention to the pro game. But the interest was in Grange, not professional football, and it didn't last. After reorganization in 1934 into a major-market league (except for Green Bay), pro football slowly gained ground with working-class fans in large cities like Chicago and New York that had no serious competition from a big-time college team. But to reach deeply into the middle class and beyond the few cities with NFL franchises, pro football had to wait for television.

TV made a national audience possible. Why that audience embraced pro football is related to the subject at hand. An image of dirty play unredeemed by higher values continued into the 1950s, then underwent a remarkable transformation by the end of the decade. In 1955 the photos in a *Life* magazine story titled "Savagery on Sunday" included one of a player with cocked arm and clenched fist, about to unload, another of a player clutching his bloody face after being slugged.[21] The slugger was fined; the sluggee required fourteen stitches. And the NFL sued *Life* for libel.

Just four years later *Esquire* magazine published a remarkable essay titled "The Wham in Pro Football" by an otherwise forgotten writer named Thomas Morgan. Morgan termed the pro game's appeal its "sanctioned savagery"—still "savagery," but *sanctioned* now, accepted, embraced even, as an antidote to what Morgan called "daily life in a tightly-civilized, humdrum community." In Morgan's formulation, "the pleasure in this savagery" for fans was "an escape from or a substitute for the boredom of work, the dullness of reality."[22]

"Sanctioned savagery." The term captures Teddy Roosevelt's endorsement of football a half-century earlier: brutality not for its own sake but as a test and a tonic for deadening modern life, whose specific conditions had changed by the 1950s, but only slightly. Morgan wrote in November of the season following what is now widely credited for giving birth to America's Game: the 1958 championship contest between the New York Giants and the Baltimore Colts, decided in sudden-death overtime with thirty million watching on television. The game's impact on NFL attendance and TV ratings was not as immediate as is sometimes assumed, but the shift from mere "savagery" to variations on "sanctioned savagery" in media accounts of pro football was instantaneous and complete. The years between 1959 and 1965 saw the TV specials "The Violent World of Sam Huff" (1960), narrated by Walter Cronkite, and William Friedkin's "Mayhem on a Sunday Afternoon" (1965), along with cover stories or features in *Time* ("A Man's Game"), *Sports Illustrated* ("The Violent Face of Pro Football"), the *Saturday Evening Post* ("This Is No Game for Kids" and "Sunday's Gladiators"), *Look* ("Madness Is a Game on Sunday"), *Esquire*

again ("The American War Game"), and *Life* ("Controlled Violence of the Pros"). The titles alone tell the story: violence not condemned, excused, or downplayed but celebrated.[23] In 1965, according to a Harris poll in October of that year, professional football overtook Major League Baseball as Americans' favorite spectator sport. Either these magazine stories and TV specials got it astonishingly wrong, or Americans embraced pro football at least in part for its "sanctioned savagery."

The game on the field in the 1960s did in fact become less dirty—TV cameras and an image-conscious commissioner, Pete Rozelle, saw to that—but also more dangerous, because of those new and improved hard-shell plastic helmets. Before the 1950s it was not feasible to use the head as a weapon. Leather helmets didn't offer enough protection, and the early plastic helmets couldn't handle the impact. Players suffered head injuries before the 1950s, sometimes with more serious consequences than anyone realized, but the first *generation* of brain-damaged NFL players could only have emerged in the 1950s with the improved helmets.

I played high school football from 1962 through 1965 in Spokane, Washington, and college football from 1966 through 1969 at Notre Dame. In high school I was coached to block and tackle with my shoulders; in college I was taught to block and tackle with my head. I've asked players from my era when they learned to lead with their heads. Some did in college, as I did, others in high school if they had more advanced coaching. No one arrived in the NFL still blocking and tackling with his shoulders. All of us also came of age in a culture

of toughness that was always part of football but particularly strong in the fifties and early sixties. The turn of the twentieth century was a similar era, featuring a reaction against the fears of an emasculating modernity. The 1920s was another, this time in reaction to the "softening" prosperity and expanding consumer culture of the postwar Jazz Age. In the fifties and early sixties this attitude appeared once more, again in response to rising comfort and prosperity but coupled now to cold war fears that we would not be tough enough to defeat the Soviet Union, that we faced a "muscle gap" as dangerous as our later supposed "missile gap." President Eisenhower created a President's Council on Youth Fitness in 1956 (I remember my teacher passing out a pamphlet that specified the number of pushups and situps we should be able to do). Just before taking office, John Kennedy wrote an article for *Sports Illustrated* in which he warned about "The Soft American" created by an "age of leisure and abundance."[24] Once in the White House, Kennedy appointed Oklahoma's Bud Wilkinson, the era's most successful college football coach, to head the Council he inherited from Eisenhower. Anxiety about the "muscle gap" played out most openly during the Olympics and U.S.-USSR track meets in the 1950s, but it spilled over into other sports, including football.

Playing football in this era didn't mean consciously taking up a geopolitical challenge, but it did mean understanding that football was a test as well as a game (*more* test than game for me, and I assume for many others). Blocking and tackling with our shoulders might have been relatively safe, but we didn't know that. I recall my sense of having escaped annihilation after I took down an older and heavier kid

with a shoulder tackle in the sixth grade. In both grade school and high school we called these drills "slaughter practice," with no sense of irony; they had other names at other schools but the same connotation. I don't know how my parents felt about football at the time I started playing. We subscribed to *Look* magazine (along with *Time*, *Life*, and the *Saturday Evening Post*, where the stories about "Sunday's Gladiators" and "Controlled Violence of the Pros" appeared). In August 1962—I would have been about to start my freshman year in high school—*Look* published an article by sports editor Tim Cohane titled "Football Is Violence," with a subtitle, "In high-school as well as the college and pro game." In the manner of the articles in 1930s women's magazines, Cohane acknowledged football's dangers—ten fatalities in 1961, one more than the average for the previous ten years—but pointed out that boys were more likely to be killed when driving, swimming, or handling firearms. More to the point: "Football teaches a boy to cope with the risks of physical danger and pain, risks often inseparable from the act of living itself. The game also demonstrates the value of work, sacrifice, courage and perseverance. These lessons are particularly salutary in our modern society with its delinquency problem, lack of discipline and physical softness."[25] I don't know if my parents read this article. I do know that proving my toughness—playing with pain, not shrinking from contact—was important to my adolescent self. And I now know that these sentiments had long been attached to football and were part of American culture. They explained why football mattered, not just why it could be fun to play or exciting to watch.

The football bogeyman of my childhood was Bear Bryant at Texas A&M and Alabama, but Bryant's brutal style of coaching was the norm, in less extreme versions, even in the distant reaches of the Pacific Northwest. Vince Lombardi became the embodiment of toughness in the NFL in the 1960s, but Lombardi just carried a long-standing style of college coaching into the pros, where it was long assumed that grown men wouldn't put up with it. Lombardi succeeded because he succeeded: had the Packers not won championships, the players would surely have rebelled against being treated, as the Packers' defensive tackle Henry Jordan famously put it, "all the same. Like dogs."

Blocking with my head instead of my shoulder, as my coaches taught me in college—stick it in the numbers, then take the man whichever direction he slid to—didn't require more toughness, just the same toughness against bigger players. But now it was my head that was hitting and being hit. By changing the fundamentals of blocking and tackling, the sturdy helmets and face masks of the fifties and sixties increased the force and frequency of head blows exponentially. This was the era of "getting your bell rung," with concussions still considered bruises (*Figure 26*). We did neck bridges and other exercises to strengthen our neck muscles and prevent spinal-cord injuries, our worst fear. A straight-on blow that didn't whip the head back could leave us dingy for a while but, we assumed, unharmed.

TABLE I
Cerebral Concussion

	1st Degree, Mild	2nd Degree, Moderate	3rd Degree Severe
Consciousness	No loss	Transitory loss (up to 3–4 minutes)	Prolonged loss (over 5 minutes)
Mental confusion	Slight	Momentary	For 5 or more minutes
Memory loss	None or very transient	Definite mild retrograde amnesia*	Prolonged retrograde amnesia*
Tinnitus	Mild	Moderate	Severe
Dizziness	Mild	Moderate	Severe
Unsteadiness	Usually none	Moderate	Marked
General recovery rate	Very rapid	Complete in 5 minutes	Slow (longer than a period of 5 minutes)

Figure 26. In this table from a 1973 textbook on *Head and Neck Injuries in Football* by Richard C. Schneider, note that a concussion not causing loss of consciousness for more than five minutes is not considered severe, and recovery is assumed to be complete.

We also worried about our knees. Soon after joining the Kansas City Chiefs in 1970 I learned an unspoken but powerful code: you don't go for an opponent's knees and put his career at risk—unless he takes cheap shots and deserves retaliation. (This experience made it hard for me to understand reports in 2010 on the New Orleans Saints' "bounty" system.) Later that code would be spoken loudly in the NFL—embedded in rules banning chop blocks and various other hits below the waist. In recent years the notorious "head-hunters" among defensive backs have actually followed the spirit as well as the letter of those rules: take off the receiver's head, but spare his knees. Football has always been violent—it's a collision sport. The question has become where to direct the violence. Before we understood the consequences of head blows, protecting players' knees was the highest priority. It would be darkly ironic if now, in order to spare the head (and the penalties and fines that accompany head hits),

linebackers and defensive backs began blowing up running backs' and receivers' knees and ending their careers.

In 1980, six years after retiring from a long and much decorated career that earned him a place on the American Football League's all-time team, my Kansas City teammate Jim Tyrer did something incomprehensible. After taking his son to a Chiefs game at Arrowhead Stadium, he returned home and, later that night, shot his wife and then himself while his children cowered in their bedrooms. When I read the account the next morning and saw mention of Jim's postfootball depression, I was a young assistant professor turning my dissertation on American sports fiction into a book. I wrote a eulogy to Jim—team captain, man of dignity as well as talent—that cast him as a familiar literary figure: the former star athlete, once a god, unable to cope with his ordinariness after the cheering stops. Today I would bet there was a simpler explanation: Jim Tyrer was probably suffering from CTE after fourteen seasons of banging his head in pro football at left tackle.

I realize now that the most frustrating injury of my own football career may have helped save me from the sort of long-term brain damage afflicting too many players from my era. In a spring scrimmage before my senior year at Notre Dame, I was snapping on an extra point when an eager freshman lined up seven yards deep on defense and timed his charge to hit me just as, head down, looking at the holder, I released the ball. My neck exploded in pain, and my left arm went numb—a pinched nerve, or "stinger," one of the occupational hazards for offensive linemen. "Stinger" sounds trivial, like the bite of an

insect, but it was temporarily debilitating, and for the next six seasons I tried to protect myself against recurrences with only partial success. Having become the starting center at Notre Dame as a walk-on by playing all out, I now had to consciously brace myself at the moment of my impact with the defensive player. Each game my senior year I pinched the nerve a few times anyway. Pain would shoot down my neck and shoulder, and my arm would temporarily go numb as I returned to the huddle and tried to shake it off before the next snap.

In Kansas City I was a backup lineman and special-teams player in the era when special teams became glamorized as "suicide squads."[26] Not for me. Like most of my teammates, I had too much sense to play with what coaches lovingly called "reckless abandon." After sprinting downfield on a punt or kickoff, I would gather myself to take on the blockers and then go for the tackle. When I could. I vividly recall a kickoff against Denver when everyone on both teams seemed to converge at a point with the ball carrier and me at the apex, in an unavoidable full-speed head-on collision. This was the loudest that my bell ever rung, and I was fortunate that I had several minutes to recover before the next kicking play. It brought a big cheer from the crowd and looked great on film the next day, but it was unintentional. Not starting on offense, I was involved in fewer plays and thus received fewer head blows. But maybe my compensating for a pinched nerve, often frustrating at the time, also helped protect me from something far worse than a "stinger."

*

With the head now a weapon in football, protecting it from direct blows became the driving force behind helmet technology. You could always tell the offensive linemen of my era by the scabbed ridges on our foreheads—gouges from the suspension in our helmets that would scab over, then break open with the first contact the next time out. Padded helmets were more comfortable but heavier, until Riddell introduced an inflatable one in 1971, followed in 1974 by a model with 32 individual air cushions.[27] The 1980s and 1990s brought new polycarbonate alloys that were both stronger and lighter. Higher-tech helmets made football less lethal. Fatalities from head injuries, mostly from tackling and being tackled, peaked in the 1960s (in 1968 specifically) and declined each decade after (from 128 in the sixties to 77 in the seventies, 42 in the eighties, 37 in the nineties, 32 in the 2000s). But greater comfort and the illusion of safety made the helmet a superior weapon and thus more dangerous to both the attacker and the attacked. As fatalities declined, catastrophic brain injuries rose: from 56 for the seasons 1987–1999 to 89 for 2000–2012.[28]

In 1978 a rules revision rather than new helmet technology changed the fundamentals of blocking, with consequences as unforeseen as they always were. In my era an offensive lineman could not extend his arms or open his hands; pass-blocking was like boxing—hit and recoil, move the feet, hit and recoil. This changed in 1978 as part of a package of rules designed to increase scoring. Quarterbacks received more protection, receivers were freed from certain kinds of contact that kept them from getting open, and offensive linemen were

allowed to extend their arms and open their hands in order to hold off pass rushers and give their quarterbacks more time in the pocket.

Instantly, sheer strength became a premium asset: extend those beefy arms and hold off the charging defenseman. Not instantly but soon, 260-pound offensive linemen became 280-pounders, then 300-pounders, to take advantage of the added strength that comes with bulk. Of course, defensive linemen had to bulk up to handle the bulked-up offensive linemen; linebackers and fullbacks, safeties and tight ends, everyone got bigger—even quarterbacks, who had to withstand the blows coming from bulked-up defensive linemen and linebackers (*Figure 27*). And the bigger, stronger players didn't get slower but faster—they were training in the weight room (with supplements), not just at the buffet table. The change to the blocking rules in 1978 did not itself create the bigger, stronger, faster players of the next generation, but it made them inevitable.

Figure 27. This table from a textbook on exercise physiology charts the bulking up of NFL players from 1920 to 1995.[29]

The 260-pound linemen of the 1970s faced weight problems in retirement. A study by the National Institute for Occupational Safety and Health of 6,848 NFL players with at least five years in the league from 1959 to 1988 found that linemen were 52 percent more likely to die of heart disease than the general population. The largest linemen were six times more at risk than those of normal size.[30] The 300-pound linemen of the 1990s and after presumably face even greater health challenges in retirement.

The NIOSH study was conducted before CTE was found in the brain of Mike Webster. Heart disease is an early killer; early-onset

dementia destroys the still living. In 2012 NIOSH took a new look at its data on the players from 1959 to 1988, this time to determine the mortality rate from neurodegenerative disorders. Of the 334 players who had died, Alzheimer's, ALS, or Parkinson's was listed on the death certificates for 17, or roughly 5 percent, more than three times the rate for the general population. Again, the rate for later players will surely be higher. Blows to the head from the bigger, stronger, faster players of the 1990s and 2000s must follow the immutable law that force is equal to mass times acceleration. The NFL generation of the 1950s and 1960s was the first to experience widespread head trauma; the generation of the 1990s and 2000s received a more massive dose.

And, as always, media and culture have played a role. Instead of the "Game of the Week" in the sixties and seventies, 24/7 sports coverage beginning in the 1980s has created an unprecedented celebrity sports culture, feeding a "guy culture" that revels in the NFL's hypermasculinity.[31] NFL games' biggest hits always showed up on *SportsCenter*. NFL Films' best-selling videos were compilations like *Crunch Course* and *Moment of Impact*. From 2003 to 2006, halftime of *Monday Night Football* on ESPN included a feature called "Jacked Up!" with clips of the hardest hits from the weekend's games. Big Hits provided Thomas Morgan's "Wham in Pro Football" with the volume now turned up.

But then, suddenly, Mike Webster's autopsy threatened to spoil the party. For the public, the discovery of CTE in the brains of former football players was a revelation from out of the blue. For

neuroscientists it was a crucial addition to the growing understanding of concussions. What we now know was in fact suspected a long time ago.[32] As early as 1952 Harvard's team doctor pointed out that "college health authorities are conscious of the pathology of the 'punch-drunk boxer,'" then added, "Just how much one should permit recurrence of cerebral concussion in college athletics is a matter of opinion." Opinion varied for several more decades, with the consensus still regarding concussions as nothing more serious than temporary bruises. The dissenters look like the enlightened ones now. While researchers generally expressed no concern about "dinged" athletes returning to play as soon as their heads cleared, a group at Northwestern was measuring the G-force of head impacts as early as 1974 and asserting that "a concussion need not be the result of a single blow but may be the cumulative effect of a series of blows." Researchers at Purdue were also measuring head impacts in the 1970s. The journal *Physician and Sports Medicine*, founded in 1973, printed regular articles and editorials on concussions in the 1970s and 1980s. In his final editorial in 1987 on "Brain Injuries in Football," the journal's founding editor, Allan Ryan, called attention to a 1981 study that measured cognitive and neurological dysfunction lasting months after the original concussion.

The particular dangers of the "second impact" were described in 1973, named in 1984, and termed a "syndrome" in 1988 by Robert Cantu (one of the current leaders in concussion research and its implications for young athletes). Cantu recommended different treatments for three grades of concussions: for a mild concussion,

removal from the game for evaluation before returning to play, with three such concussions ending the player's season; for a moderate concussion (loss of consciousness up to five minutes), suspension of play until symptom-free, perhaps a week, with a second moderate concussion ending the player's season; and for a severe concussion (loss of consciousness for more than five minutes), hospitalization to test for intracranial bleeding, followed by a full month of recovery.[33] (Today Cantu's recommendations more or less move up one grade: mild concussions now treated like moderate, moderate like severe.) Someone reading these articles today might wonder why it took so long for anything to change, but this retrospective clarity can be misleading. Studies involving small numbers of subjects must be replicated, and at best they can only hint at a larger picture. If that picture begins to emerge, lab results must still find their way to the football field and sidelines.

In the absence of evidence from longitudinal studies, none of this research addressed long-term effects,[34] but growing concern about head injuries and their impact reached a point that the brand-conscious NFL could no longer ignore it. In 1994 Commissioner Paul Tagliabue formed a Committee on Mild Traumatic Brain Injury, chaired by Elliott Pellman, the New York Jets' team physician—who happened to be a rheumatologist, not a neurologist (with a medical degree from a Mexican university rather than the more prestigious American one he claimed). Committee members heard testimony, conducted research, and in October 2003 published the first of what would become sixteen

papers in the journal *Neurosurgery* (edited by the New York Giants' neurosurgical consultant).

The first two were well-regarded studies of the biomechanics of concussions. Then came a series of articles, over the objections of peer reviewers to their flawed data and methodology, that downplayed the frequency and seriousness of concussions, even repeat concussions (second-impact syndrome), as well as any long-term consequences.[35] Among the denials were responses to Bennet Omalu's report on finding CTE in Mike Webster's brain, published in *Neurosurgery* in 2005. (Members of the NFL's committee tried unsuccessfully to force Omalu to retract it.) Pellman was the lead author of a 2004 article in the journal that specifically refuted claims about CTE in football players, whose shorter careers and fewer head blows made them less susceptible than boxers. Despite growing evidence that multiple concussions could cause long-term damage, and with popular players like Al Toon, Troy Aikman, and Steve Young retiring early to avoid it, the NFL's "Dr. Yes," as *ESPN The Magazine* christened Pellman in 2006, continued to advocate that concussed players return to play.[36]

A shift in public awareness nonetheless began in early 2007 when Alan Schwarz reported in the *New York Times* on two new cases: Andre Waters, a suicide at age forty-four the previous November, found to have the brain tissue of an eighty-five-year-old Alzheimer's patient; and Ted Johnson, thirty-four and just two years into retirement, already suffering from Alzheimer-like symptoms. Pellman resigned as chair of the NFL committee, to be replaced by co-chairs. One of them, Ira Casson, instantly became Dr. No to Pellman's Dr. Yes, for his

repeated unqualified "no" to a series of questions in a TV interview whether there was any evidence that football damaged players' brains. In May 2007 the University of North Carolina's Center for the Study of Retired Athletes linked concussions to later depression. The NFL announced a new 88 Plan for retired players with dementia, named for the number worn by Hall of Fame tight end John Mackey, whose dementia was far advanced by this time. But almost at the same time the league convened its Concussion Summit to refute the evidence that playing football caused dementia. In June the House Judiciary Subcommittee on Commercial and Administrative Law heard testimony from former players struggling with mental and physical disabilities and threatened legislative action if the NFL and the Players Association didn't do something about their Kafka-esque process for getting financial assistance. In August, without admitting any connection between concussions and later brain damage, the NFL announced that concussed players should not return to the practice or game in which they were injured.[37]

But another two full years passed before the slowly unfolding concussion story reached what Malcolm Gladwell would call a tipping point, with the report on the Michigan study, the stories in *GQ* and the *New Yorker*, and the congressional hearings in late October 2009. NFL denials surely delayed broader public understanding of football's danger to brains. Commissioner Goodell's reversal over the winter of 2009–2010 not only cleared the way for better understanding but also accelerated the pace of research, with a modest NFL grant of $1 million to the Center for the Study of Traumatic Encephalopathy,

followed more recently by $30 million to the National Institutes of Health (seemingly part of a strategy to marginalize the CSTE, which has grown too prominent and critical). The NFL's worst nightmare is a research breakthrough that definitively judges football too dangerous for NFL players, let alone boys and adolescents. But helping to fund that research is less risky than seeming indifferent. And such definitive understanding will be long in coming, if it comes at all. Like many other fundamental medical questions that most concern us, answers to this one will be elusive.

V: Taking the Head Out of Football?

The signs of CTE in Mike Webster's brain, then in Terry Long's, Andre Waters's, and Justin Strzelczyk's after their equally shocking early deaths, were a new kind of evidence of football's dangers: not abstract in a dataset but visible in the flesh. Each new announcement from Ann McKee's lab has played like another episode in a continuing melodrama. To date, fewer than a hundred cases of CTE have been documented among the thousands of former NFL players, but the ravages of CTE have become the most potent symbol of a broader public health issue that potentially affects millions. While public attention has focused on the dramatic revelations from Ann McKee's lab, pre- and postconcussion cognitive testing, and the measuring and counting of head blows with sensors in the helmets of high school and college players, researchers are less dramatically working toward a better

understanding of football's dangers for everyone who plays. Neuroscientists in labs around the country are searching for biomarkers for CTE, new materials for helmets, and evidence of how the brain responds to various kinds of blows. Helmet manufacturers are racing to develop safer helmets while attempting to shield themselves from liability claims (*Figure 28*). And insurers are reassessing coverages and rates for teams and sports organizations.

Figure 28. The warning label on the back of helmets manufactured by Schutt Sports, presumably for liability purposes, sums up the state of football today.

Discovery of a biomarker for diagnosing CTE in living brains may be imminent, and with sufficient funding this would make it possible to test a huge sample of former players across a range of ages, in order to clarify the incidence and progression of CTE. Even then, the effects of the new rules for reducing head blows and managing

concussions will take longer to determine. The NFL on its own might continue on its current course, making the game visibly safer apart from whatever invisible damage occurs. But the NFL is not on its own; it needs its pipeline, and below the NFL, from youth leagues through college, football's future is threatened not just from the medical risks themselves—how can educational institutions justify damaging brains as well as bodies?—but also from the lawsuits and soaring insurance costs that follow. And while NFL fans can be patient, parents won't have that luxury. The pipeline will contract, though how tightly I cannot predict.

Today we know two things for certain that we didn't know ten years ago: that football damages brains as well as bodies, and that players at all levels are at risk. Beyond that lies much uncertainty. For the NFL, uncertainty is a shield against liability. For parents, it's a nightmare. The obvious way to make football safer is to take the head out of the game. Whether concussions or repetitive subconcussive blows are more dangerous, both kinds are blows to the head.

It would be a gift if it turns out that major concussions are more dangerous, because they are easier to reduce or eliminate. Spearing with the helmet was outlawed years ago. Banning helmet-to-helmet contact in recent seasons has been controversial but relatively easy: it happens in the open, where it can be clearly seen. Logic alone, with no science, would say that helmet-to-helmet hits are doubly dangerous simply because they involve two heads. But they also produce the loudest collisions and often the greatest visible impact.

The sounds of NFL football have become as important as the visual spectacle in keeping the game and its players larger than life. Watching pro football over the past two years, I have found the game no less thrilling or less "physical," due to fewer helmet-to-helmet hits. Shoulder tackles do not look less forceful than head-on collisions. They don't, however, produce shock and awe in fans, often followed by stunned silence for a prone body on the field. Will that seem like a loss to the tens of millions who are passionate about NFL football?

If it turns out that subconcussive blows are the chief problem, football at all levels is in deep trouble. Such collisions cannot be eliminated except by literally taking the head out of football, returning in effect to the days of no helmets and leather helmets, when head blows were accidental, not fundamental. Americans passed on rugby in the 1880s; since the 1950s we've become accustomed to head-first collisions. Linemen in two-point stances, battling with fists rather than heads and shoulders, would return to the football of the 1880s and 1890s. Football with no helmets at all would look more like rugby. If we can't go that far in taking the head out of the game, should we prohibit facemasks so that players would instinctively protect their noses and their looks? (The nose protector, after all, was the first piece of equipment that players adopted.) The head was not always a weapon in football, but since it has become one, is it possible to disarm it? How far can we go and still have a game that looks and feels like football?

And will fans still get excited about football that protects the head? For the shock power of its collisions, football could be trapped in the logic of slasher films: *Texas Chainsaw Massacre 4* must be more gruesome than *1*, *2*, and *3* in order to make *5*, *6*, and *7* marketable. But violence is just one factor in the football equation. If we think of football violence as V and its artistry as A, then we can imagine that the pleasure in watching football (P_f) equals V times A. (Picture the astonishing artistry of the receiver making a fingertip catch on the sidelines as the cornerback slams him to the turf.) Although football's V cannot be reduced to zero, it could decline while A remains constant or even rises with always-improving skill levels and the best athletes playing longer because they are less injured. A safer football might not just survive but thrive. But whether it can, and will, is not a certainty.

At stake is the mental and physical health of potentially millions of children and adults. Also at stake is football—the nine-billion-dollar National Football League, which is about the sole vestige of a mass culture in this country; the college game that has defined American higher education for a century; the high school game that arouses the greatest passions in small towns in states like Texas and Georgia; and the youth game long believed to teach boys how to become men. I sometimes hear, if we get rid of football we'll just find something else to satisfy our need for violence—we already have Ultimate Fighting, after all. I don't think it's that simple. "We" don't have Ultimate Fighting; a small subset of us does. Football has a truly mass audience that crosses genders, races, classes, religions,

politics, and everything else that divides us. If "we" do in fact have a need for violence, football has satisfied it for a long time in relatively benign ways. Fatalities, though always shocking, have been rare. The physical damage to bones and joints has generally been regarded as an acceptable price. But that balance shifted with Mike Webster's brain. Football's potential costs are no longer "relatively benign."

Perhaps football has allowed us to indulge our dark desires without confronting the darkness; what do we do now that the darkness has been illuminated? Or maybe violence just feeds football's intensity, and it's not the violence but the intensity that we crave for escape from everyday life. Perhaps safer football can still provide it. Thinking about football can make us ponder Big Questions regarding nature and nurture, biology and culture.

I can see football surviving if concussions are the problem, because they can be eliminated or at least radically reduced. But if subconcussive blows are equally or more dangerous, the question will be, how many are too many? Taking the head out of the game altogether would solve the problem, but only by ending football as we know it. To save football, we may have to go much farther than we've gone so far in reducing head blows in both practices and games. But will we like the results? Given its history, how safe can football be and still be football?

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Notes

[1] The definitive account is Mark Fainaru-Wada and Steve Fainaru, *League of Denial: The NFL, Concussions, and the Battle for Truth* (New York: Crown, 2013), which appeared just in time for me to clarify details in my telling here.
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[35] I continue to follow Shurley and Todd here; also Mark Fainaru-Wada and Steve Fainaru, *League of Denial: The NFL, Concussions, and the Battle for Truth* (New York: Crown Archetype, 2013).
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