I still remember my first football game. It was 1983. I was six. My father took me to our local high school, in northern New Jersey, and we sat on the home team’s side, but it wasn’t long before my allegiance began to waver. The opponents, from a town called Passaic, were clearly superior—or, rather, they had a superior player whose simple talents were easy to identify in a game so complex and jumbled-seeming that even lifelong fans do not fully understand it. He wasn’t the biggest person on the field, and probably not the fastest, but he was strangely fast for a big person and unusually big for a fast person. He played both sides of the ball: running back and linebacker. He was also the kicker, and he returned punts. In my memory, he scored a touchdown, kicked a field goal, and sacked the quarterback for a safety. 12–0. As my father and I searched for his name in the program, a man seated a couple of rows in front of us spun around and said, “They call him Ironhead.” I was smitten.

Ironhead, whose given name was Craig Heyward, went on to become a star at the University of Pittsburgh and then a pro with several N.F.L. teams, although he was probably more famous for his nickname and for his physique than for his accomplishments on the field. He was strictly a running back after high school, but he looked more like a lineman: a “bread truck with feet,” as one writer called him. Heyward did not run sweeps. He ran up the middle: into, through, and over, but seldom around, defenders. His style of play embodied Newton’s second law of motion: force equal to mass times acceleration. I think of him every time I see the Old Spice commercial in which the Baltimore Ravens star Ray Lewis emerges from the shower naked except for a suit of fake soapsuds, because Ironhead, as a spokesman for Zest body wash, in the mid-nineties, was a pioneer of the genre. He was that crucial thing in the marketing of football: a cuddly warrior. It’s easier to marvel at the gladiatorial nature of the game when the participants appear to be laughing about something as trivial as personal hygiene.

“He would lower his head into opponents’ stomachs, and one opponent said it hurt so much that Heyward’s head had to be made of iron”: that explanation for the name that made him my favorite player appeared in Heyward’s obituary in the Times, in 2006. The anecdote referred to his habit while playing “street football,” without a helmet, as a “wayward” boy in Passaic. He was only thirty-nine when he died, from a brain tumor. Even the hardest of heads is vulnerable to disease. I’ve never read or heard any suggestions that the cancer was related to Heyward’s football career, but when the executives at the N.F.L.’s headquarters, in Manhattan, talk about “changing the culture” of the sport, as they have been doing with increasing urgency in the past few months, in response to growing public concern over concussions, the use of the head as a
battering ram, with or without a helmet, is near the top of the list of things they’d like to disown.

I thought of Ironhead last month as well, while standing in the lobby of the InterContinental Hotel, where a special meeting of the league’s Head, Neck, and Spine Injury committee was convening in one of the function rooms. Bert Straus, an industrial designer with a background in bathroom fixtures, dental-office equipment, and light-rail vehicles, was showing off a prototype of a new helmet called the Gladiator, whose primary selling point is that it has a soft exterior. A colleague of Straus’s handed me a pamphlet titled “Collision Physics for Football Helmets.” This stuff goes way beyond Newton: elastic versus inelastic collisions, “Complex Modulus = f (Rate of deflection, Young’s modulus, % compression).” I picked up the helmet. It felt awfully heavy. It also didn’t feel very soft. The Gladiator is made of reaction-molded polyurethane, like the bumper on your car. Truly soft shells run the risk of causing friction, which is bad for the neck.

Colonel Geoffrey Ling, a neurologist with the Defense Department, had come to the InterContinental to share some of the government’s research with the N.F.L.’s medical brain trust. (Concussions among the men and women returning from Iraq and Afghanistan, one doctor told me, could be “the next Agent Orange.”) “If you look historically, what really hurts our soldiers from blasts is artillery shells, mortar shells,” Ling said. “The combat helmet was designed particularly for mitigation of fragments. It does have some ballistic protection. You could shoot at the thing point blank with a 9-millimetre pistol, and you won’t penetrate it. That’s pretty doggone good. I’m surprised New York City policemen aren’t wearing the doggone thing. But, like, I wouldn’t play football with the thing. It ain’t that good.”

Was Ironhead a role model for a sport with no future?

We’ve been here before, historians remind us, and we have the pictures to prove it: late-nineteenth-century newspaper and magazine illustrations with captions like “The Modern Gladiators” and “Out of the Game.” The latter of those, which appeared in Harper’s Weekly in 1891, describes a hauntingly familiar scene, with a player kneeling by his downed—and unconscious—comrade, and waving for help, as a medic comes running, water bucket in hand. It accompanied an essay by the Yale coach Walter Camp, the so-called Father of American Football, whose preference for order over chaos led to the primary differentiating element between the new sport and its parent, English rugby: a line of scrimmage, with discrete plays, or downs, instead of scrums.

Camp viewed football as an upper-class training ground, not as a middle-class spectator sport. But the prevalence of skull fractures soon prompted unflattering comparisons with boxing and bullfighting. Another image, which ran in the New York World, depicted a skeleton wearing a banner labelled “Death,” and was titled “The Twelfth Player in Every Football Game.” Campaigns in Chicago and Georgia to outlaw the sport were covered breathlessly in the New York dailies. That was in 1897, “the peak of sensationalized football violence,” as Michael Oriard, a former offensive lineman for the Kansas City Chiefs who is now an associate dean at
Oregon State University, explains in “Reading Football: How the Popular Press Created an American Spectacle.”

The crisis surrounding football’s brutality at the turn of the twentieth century was so great that it eventually inspired Presidential intervention. Greg Aiello, the N.F.L.’s present-day spokesman, told me, “You should research Teddy Roosevelt’s involvement in changing the game in 1905.” Roosevelt, whose son was then a freshman football player at Harvard, summoned college coaches to the White House to discuss reforming the sport before public opinion turned too far against it. Eighteen people had died on the field that year. The idea, or hope, was to preserve the game’s essential character-building physicality (“I’ve got no sympathy whatever with the overwrought sentimentality that would keep a young man in cotton-wool,” Roosevelt wrote) without filling up the morgue. The next year, the forward pass was legalized, thereby transforming football from a militarized or corporatized rugby to something more like “contact ballet,” as Oriard calls it.

Aiello’s point was that the game goes on; you reform it as needed. Dave Pear, a retired Tampa Bay Buccaneer, brought up the same example with the opposite lesson in mind. “Look at the historicity of football and Heismans,” he said, referring to John Heisman, who was among the leading advocates of the forward pass in 1906. “Football almost ended in the early nineteen-hundreds.” Pear’s view is that the game always has been “hazardous to your health, like smoking cigarettes,” and that trying to remove violence from football, as the N.F.L. now seems bent on doing, is like trying to remove the trees from a forest. “Now it’s not an instant death,” he said. “Now it’s a slow death.” You could say that Dave Pear holds a grudge: he has a minuscule pension, is uninsurable, and estimates that he has spent six hundred thousand dollars on surgeries and other medical issues (fused disks, artificial hip, vertigo) related to his football career. “I’m not trying to end football,” he said. “It’s not that I don’t like football.” But: “I wish I had never played.”

Introducing the forward pass may have saved the sport from marginalization, or even banishment, but it did not resolve the inherent tension in our secular religion. With increased professionalization, in the middle decades of the last century, came specialization within the sport, and the demise of players who covered both offense and defense. And with specialization came increased speed and intensity, owing, in part, to reduced fatigue among the players, as well as skill sets and body types suited to particular facets of the game. “Savagery on Sunday” was the headline on a Life story in 1955. Walter Cronkite produced a half-hour special, “The Violent World of Sam Huff,” about a New York Giants linebacker who had declared, “We try to hurt everybody.”

The increased attention—football was on its way to surpassing baseball as the nation’s favorite spectator sport—brought more reforms, many of them related to equipment: chinstraps, the rubber bar, full-on face masks. “Even as the discussion of the game’s violence was at its shrillest, the sport was becoming safer,” Michael MacCambridge writes in “America’s Game:
The Epic Story of How Pro Football Captured a Nation.” But, even as the game was becoming safer, through better equipment and further tweaking of the rules (calling a play dead as soon as a knee touched down, say, to limit bone-crunching pileups), it was evolving in such a way that it also became more dangerous, as players, comfortably protected by their face masks, learned to tackle with their heads instead of with their arms and shoulders. When Michael Oriard played for the Chiefs, in the early nineteen-seventies, he weighed two hundred and forty pounds; his counterpart on today’s Chiefs roster weighs about three hundred and ten, and is probably no slower. Players didn’t obsessively lift weights in Oriard’s day.

From all these developments, we got smash-mouth football and, later, the spectacularly combustive open-field collisions that seem to leave players in a state of epileptic seizure nearly every weekend now. “We had a lot of discussions right after I became commissioner about this subject,” Paul Tagliabue, who served as the N.F.L.’s chief executive from 1989 until 2006, told me recently. “And one by-product of that was the question of whether defensive players were acquiring a sense of invulnerability, and playing the game with a level of abandon and recklessness that was not warranted. We created a committee with Mel Blount and Willie Lanier and some others. They raised the idea that it was no longer tackle football. It was becoming collision football. The players looked like bionic men. Whatever was the violence of Sam Huff, I don’t think he felt invulnerable, like a bionic man.”

Throughout most of the Super Bowl era, football was understood to be an orthopedic, an arthroscopic, and, eventually, an arthritic risk. This was especially obvious as the first generation of Super Bowl heroes retired and began showing up at reunions and Hall of Fame induction ceremonies walking like “Maryland crabs,” as a players’-union representative once put it. But a couple of incidents early in Tagliabue’s tenure left him with a sense of foreboding. “In 1991, my second season, Mike Utley went down,” he said, alluding to the paralysis of a Detroit Lions offensive lineman. “A year later, Dennis Byrd went down. Once you see two injuries like Mike Utley’s and Dennis Byrd’s, you begin to see that there are long-term consequences to injuries on the football field.” He meant long-term consequences of a sort that you can’t joke about, while patting your fake knee or hip and complaining that you can no longer navigate stairs or play with your grandkids. Byrd, who was a defensive lineman for the Jets, gradually taught himself to walk again, after being given a prognosis of partial paralysis, and delivered a rousing pep talk to the Jets before their upset victory over the Patriots in the conference semifinals, earlier this month. Utley’s moral is a grimmer one. As he was being carried off the field on a stretcher, he didn’t yet know that he was paralyzed from the chest down. He stuck his thumb up, and the fans applauded.

What was missing from this picture was the effect of all that impact on the brain. You got your “bell rung,” they used to say. You’re “just a little dinged up.” This was not merely macho sideline-speak; it was, as recently as a decade and a half ago, the language of the N.F.L.’s leading doctors. Elliot Pellman, who served until 2007 as the Jets team physician, once told a
reporter that veteran players are able to “unscramble their brains a little faster” than rookies are, “maybe because they’re not afraid after being dinged.”

Chronic traumatic encephalopathy, or C.T.E., is the name for a condition that is believed to result from major collisions—or from the accumulation of subconcussions that are nowhere near as noticeable, including those incurred in practice. It was first diagnosed, in 2002, in the brain of the Pittsburgh Steelers Hall of Fame center Mike Webster, who died of a heart attack after living out of his truck for a time. It was next diagnosed in one of Webster’s old teammates on the Steelers’ offensive line, Terry Long, who killed himself by drinking antifreeze. Long overlapped, at the end of his career, with Justin Strzelczyk, who was also found to have C.T.E. after he crashed, fatally, into a tanker truck, while driving the wrong way down the New York Thruway.

Credit for the public’s increased awareness of these issues must go to the Times, and to its reporter Alan Schwarz, whom Dr. Joseph Maroon, the Steelers’ neurosurgeon and a longtime medical adviser to the league, calls “the Socratic gadfly in this whole mix.” Schwarz was a career baseball writer, with a heavy interest in statistics, when, in December of 2006, he got a call from a friend of a friend named Chris Nowinski, a Harvard football player turned pro wrestler turned concussion activist. Andre Waters, the former Philadelphia Eagles safety, had just committed suicide, and Nowinski was in possession of his mottled brain. The earliest cases of C.T.E. had been medical news, not national news. Nowinski’s journalist contacts, as he recalls, were in “pro-wrestling media, not legitimate media.” He needed help.

Schwarz, acting more as a middleman than as a journalist pitching a hot story, set up a meeting between Nowinski and the Times’ sports editor, Tom Jolly, for whom Schwarz had been writing Sunday columns about statistical analysis on a freelance basis. Rather than assign the story to one of his staffers, Jolly suggested that Schwarz write it. The result, “Expert Ties Ex-Player’s Suicide to Brain Damage from Football,” wound up on the front page, on January 18, 2007. It described Waters’s forty-four-year-old brain tissue as resembling that of an eighty-five-year-old man with Alzheimer’s, and cited the work and opinions of several doctors whose research into the cumulative effect of head trauma was distinctly at odds with that of the N.F.L.’s own Mild and Traumatic Brain Injury committee (M.T.B.I.), which had been created by Tagliabue. “Don’t send them back out on these fields,” Waters’s niece told Schwarz, referring to young would-be football players.

Ted Johnson, a recently retired New England Patriots linebacker, read the Waters piece and called Schwarz. He was thirty-four years old and had been locking himself in his apartment with the blinds drawn for days at a time. He believed that his problems had started in 2002, when, he said, his coach, the sainted Bill Belichick, ignored a trainer’s recommendation that Johnson practice without contact while recovering from a concussion. Schwarz accompanied Johnson to a meeting with his neurologist, Dr. Robert Cantu, who said, “Ted already shows the mild cognitive impairment that is characteristic of early Alzheimer’s disease.” Two weeks after
the Waters piece, Schwarz landed another freelance submission on A1: “Dark Days Follow Hard-Hitting Career in N.F.L.”

Schwarz’s phone kept ringing. Several of the callers were the mothers and wives of football’s damaged men. They represented a readership far less likely to have come across, say, the annual men’s-magazine features about mangled knees, wayward fingers, and back braces, which had hardened almost into a sportswriting trope. In March, Schwarz published another front-pager: “Wives United by Husbands’ Post-N.F.L. Trauma.” Glenn Kramon, an assistant managing editor at the Times who oversees long-term, Pulitzer-worthy projects, read this piece and decided to intervene. Schwarz was given a full-time position, with no responsibilities other than to broaden his new beat’s focus beyond the N.F.L. to the more than four million amateur athletes who play organized football. Although Schwarz was assigned to the sports desk, the Times framed the story as a matter of public health, akin to tobacco, asbestos, and automobile safety. Schwarz covered high schools, helmets, workmen’s comp, coaching, and so on, earning the nickname Alan Brockovich among friends. “You can imagine how many lawyers I hear from,” he once told me.

Schwarz’s expansive focus, as he reiterated it, one piece at a time, threatened to affect the so-called pipeline, the future sons of football, whose non-sports-fan mothers were reading his accounts. The reaction of the football establishment, both at the league office and at stadiums around the country, was not warm. “I remember hearing voices within the game, at the club level: ‘We don’t need this muckraking reporter doing this,’ ” Michael MacCambridge told me.

“Their initial reaction was ‘This guy’s out to get football,’ ” Gregg Easterbrook, the author of ESPN’s popular “Tuesday Morning Quarterback” column, said. “I felt a little of that myself.”

Schwarz may not have been out to get football, but he was clearly less emotionally invested in it than most of his predecessors and peers, who had helped build the sport into the de-facto national pastime with romantic coverage of heroic sacrifice. He was not a fan. “I’d been pitching this to reporters for years,” Nowinski told me, of the head-injury problem in general. “People in football told me, point blank, ‘I don’t want to lose my access.’ It literally took a baseball writer who did not care about losing his access, and didn’t want the access, to football.”

Schwarz’s math background came in handy, too, as he batted away the statistical objections about the unknown incidence of C.T.E. from skeptical doctors. And Schwarz had the backing of a news organization that did not see itself as having any symbiotic ties to the game’s economic engine. (ESPN, which drives the national conversation on sports, invests more than a billion dollars a year in football broadcasting.) “There’s certainly been a lot of tension between Alan and the N.F.L., and the N.F.L. and our editors,” Jolly said. “Their communications people made it clear that they were not happy with the reporting. Some of their folks were pretty brusque and not particularly eager to work with Alan.”

What we now know, from reading Schwarz, is that retired N.F.L. players are five to nineteen times as likely as the general population to have received a dementia-related diagnosis; that the
helmet-manufacturing industry is overseen by a volunteer consortium funded largely by helmet manufacturers; and that Lou Gehrig may not actually have had the disease that bears his name but suffered from concussion-related trauma instead. (Since 1960, fourteen N.F.L. players have had a diagnosis of amyotrophic lateral sclerosis, which is about twelve more than you would expect from a random population sample.) In the manner of Elisabeth Kübler-Ross, Dr. Maroon has delineated four stages in the N.F.L.’s reaction to the reality of brain damage: active resistance and passive resistance, shifting to passive acceptance and, finally, in the past few months, active acceptance. “What we’re seeing now is that major cultural shift, and I think Alan took a lot of barbs, and a lot of hits, initially, for his observations,” Maroon said.

When I ran into Schwarz in the lobby of the InterContinental Hotel, last month, he mentioned that his story tally on the beat was at “a hundred and twenty-one and counting.” We were both there for the meeting of the N.F.L.’s Head, Neck, and Spine Injury committee, a newly rebranded version of the M.T.B.I. group, which had come in for so much Schwarz criticism from the beginning. Several of the old doctors, including the Jets’ Elliot Pellman, were gone. Some of the new committee members were longtime sources of Schwarz’s.

The meeting was closed to the press. Although Schwarz told me he’d heard from various participants that they were advised not to speak with him, he’d been getting live updates on his cell phone from sources inside the room. The gadfly was enjoying his moment. During a midday break in the proceedings, five doctors, including Robert Cantu, Ted Johnson’s neurologist, emerged to take questions. About two dozen journalists had showed up. By my count, twelve questions were asked, eight of them by Schwarz.

“They may never give Alan himself credit, but he’s done the work of angels,” Easterbrook said.

“There’s no question that HD television is remarkable,” Art Rooney II, the president of the Pittsburgh Steelers, said, the week before Thanksgiving. “But it also, at times, may give us a view of something that we didn’t always have before, and in some cases it may be shocking to people, I guess.” Rooney was sitting in his office at the team’s practice facility, on the south side of the Monongahela River, and reflecting on the state of pro football, a Rooney family business since 1933. His Steelers, who are among the most successful and beloved franchises in all of professional sports, had recently drawn better ratings for a midseason Sunday-night matchup against the New Orleans Saints than had Game Four of the World Series. They had also become a focal point in football’s culture war. “I mean, we had the one weekend where we had three or four hits that some may have overreacted to,” Rooney went on. “But in general, from what I’ve been able to observe, it’s been a robust debate.”

On the weekend in question, which one writer called Black and Blue Sunday, and which fell in the middle of October, at least eleven N.F.L. players were concussed, about one or two more than average. A few of the hits were cringe-worthy—helmet-knockers that lent themselves especially well to modern replay technology, where the elasticity of the human neck is on full
display. What’s more, they followed on the heels of a tragic accident that was still fresh in the news from the day before, involving a Rutgers student who was paralyzed while defending a kick return at New Meadowlands Stadium, the home of the Giants and the Jets. If the reaction of the league—levying a hundred and seventy-five thousand dollars in fines on three hard hitters and threats for future infractions—could be considered excessive, then so, certainly, were the inevitable gripes that followed, about putting pink skirts on the players.

October is a month in which the N.F.L. has taken to courting female fans by celebrating breast-cancer awareness. A number of players, victims and offenders alike, were already wearing pink accessories (gloves, cleats, chinstraps) in honor of the cause.

A couple of the concussive hits that Rooney referred to had been delivered by the Steelers’ linebacker James Harrison, a onetime Defensive Player of the Year, who made the mistake, in the locker room afterward, of being honest about his understanding of football, which was, after all, the same as Sam Huff’s: “I try to hurt people.” Successfully hurting people hadn’t earned him any penalty flags in this particular game, and a photograph of him flattening one of his victims was briefly available as a souvenir for sale through the N.F.L.’s Web site, the next day. But he was villainized in the national press, and fined seventy-five thousand dollars, anyway, and it left him at a loss. “What we saw Sunday was disturbing,” Ray Anderson, the N.F.L.’s executive vice-president of football operations, said. “We’re talking about avoiding life-altering impacts.” The rules remained the same; the league just seemed to want them enforced differently, and with an eye toward outcome and appearance as much as technique. Harrison took a day off and contemplated retirement (“James is very concerned about how to play football,” his agent said), while his teammates rallied around him and joked about how they might have to start tweeting opponents before tackling them, as a precautionary measure. If there were to be no more “devastating hits,” as Anderson had indicated, and if “defenseless” receivers were to be somehow protected by their opponents, then was this really football?

“I understand our players when they say they’re not sure what they can do at this point,” Rooney said, cautiously. “We are asking a lot of our defensive players, in terms of watching where they hit somebody, when everything’s happening so fast out there. What we’re asking them to do is not easy. That’s in addition to the fact that we’re also asking them to do something different from what they’ve been trained to do over the years.”

Two generations ago, the Rooney men were boxers. They are now lawyers and diplomats, the civic paragons of Pittsburgh, and also of the N.F.L. They epitomize what family-run businesses can mean to a place, because of the implied trust and moral responsibility involved. The so-called Rooney rule, under which N.F.L. teams are required to interview at least one minority candidate for all head coaching and G.M. jobs, is named after Art’s father, Dan, the team’s chairman emeritus and also our Ambassador to Ireland. (His public endorsement of Barack Obama, during the most recent Presidential campaign, was a major event in coal country.) Here was a man who is revered by progressive, charitably minded people, not your
typical asbestos-plant manager. The Steelers had been the first team to keep a neurosurgeon with them on the sidelines, and the first to introduce any kind of objective measurement of cognitive function. It wasn’t enough, and the norms of polite society were shifting underneath Rooney.

In the month following Black and Blue Sunday, the Steelers found it more useful to view themselves as victims of a different kind of culture war, between the suits on Park Avenue and the grunts in Pittsburgh. Their coach, Mike Tomlin, had objected to efforts by the league to demonstrate that Harrison was changing his behavior to comply with the new mandate. The previous week, against New England, the Steelers’ captain, Hines Ward, had left the game with what the team at first described as a neck injury, which would allow reëntry at the player’s discretion, instead of a concussion, which, as of last year, forbids it. But a concussion it was. “It’s my body,” Ward complained afterward. “I feel like if I want to go back out there I should have the right.”

“Hines would go back in the game with a broken leg, so that’s just the kind of player he is,” Rooney said. “I do think that there’s been a connection between our team and our region, let’s say, that is based on a blue-collar-work-ethic-type approach to life, and certainly people that grew up working in the mill were tough people that had to work hard and had to work tough jobs. And so I think the reason football became so popular here in western Pennsylvania was because of that—because the area was populated by people who were accustomed to and appreciated hard work and tough work, and wanted their football team to reflect that.” He mentioned that Harrison, a man who earns several million dollars a year for his toughness, had been receiving unsolicited donations from Steelers fans to help pay his fines. “So I think our fans want to see our players continue to play football the way they understand football should be played,” he said.

The robust debate over how football should be played is further complicated by a contentious labor situation that threatens to result in the cancellation of the 2011 season. The league and the owners would prefer an eighteen-game schedule. The players, naturally, have tried to characterize this as hypocrisy: if the game has become disturbingly dangerous, why play more? They doubt that anyone has ever really had their long-term interests in mind, and maintain a deeply felt sense that fans and owners can’t begin to appreciate how hard football is, and how tenuous the line is between fearlessness and vulnerability.

“I don’t think there’s enough of them up there that have actually played the game,” James Harrison said, of the league executives in Manhattan, when I visited the Pittsburgh locker room after a big win against the Oakland Raiders, late in the season. “You got Merton Hanks that, you know, played the game so many years ago. I mean no disrespect, but the game’s a lot faster than it was when he played. When we’re right there, and it’s bang-bang, you don’t have time to adjust.” Hanks, who is the N.F.L.’s director of game operations, was an All-Pro safety for the San Francisco 49ers. He retired in 1999, which hardly seems like that many years ago, but
twelve years is four times the average length of a professional football career.

Up in the press box, I’d noticed a casual disdain for the initial efforts to sanitize the game as the referees tossed yellow flag after yellow flag. “Apparently, you can’t tackle the quarterback now,” one writer mused, after one of Harrison’s fellow-linebackers was called for roughing the passer. “Unbelievable!” another said, after a personal foul on Harrison—who had landed with the full force of his body weight on the QB—negated a Steelers interception. The Steelers had wound up with more penalty yards in this game than in any previous game, and the writers saw this as an opportunity to highlight the differences between the league and the team.

When I brought up the call for change with the Steelers’ Troy Polamalu, an All-Pro safety who plays with brilliant abandon, and mentioned that the sport’s popularity seemed to be unflagging, he cut me off. “Is that your opinion? That it doesn’t need to be changed?” He later added, “This game’s on the verge of getting out of hand,” and defended the refs, who, he said, were “just trying to protect it.” This from a guy who, a few weeks earlier, had complained that there was “a paranoia that is unneeded,” and that if people wanted to watch soccer they could and would.

“In the past, it was a style of ball that was three yards and a cloud of dust, so you didn’t see too many of these big hits, because there wasn’t so much space between players,” Polamalu said. “I mean, with the passing game now, you get four-wide-receiver sets, sometimes five-wide-receiver sets. You get guys coming across the middle, you get zone coverages. You know, there’s more space between these big hits, so there’s more opportunity for these big hits.” The Times, in 1906, celebrated the dawn of the forward-passing era as an opportunity to “open up the game,” and to showcase speed and skill instead of mere brute strength. Bill Walsh, the late 49ers coach, and the man most often credited with popularizing the passing-dominated approach to offense that Polamalu was describing, was committed to changing the sport’s militaristic culture. “Too many high-school coaches, in his opinion, were veterans who viewed football like preparing for combat,” Paul Tagliabue recalled.

Troy Polamalu is about as dynamic an athlete as I have ever seen, and as soft-spoken in person as anyone I have ever met. He is football’s Dalai Lama. He has had at least seven concussions. “Honestly, it hurts both players, you know, and, whenever you see those big hits, it’s not just offensive guys lying on the ground,” he said. The statistics bear this out: defensive backs were the most extensively concussed group of players on the field this N.F.L. season, followed by wide receivers. Contact ballet can kill.

The fastest running on a football field often occurs during kickoffs and punts, when some members of the defending team are able to build up forty or more yards of head-on steam before a possible point of impact. (The forty-yard dash, the standard measurement for judging the speed of potential draft picks, is so named because it was thought to be the distance a player would have to sprint to catch up with a punt.) One proposed reform that I’ve heard about would involve removing this element from the game, through automatic fair catches, or at least
neutering it, by shortening the distance travelled by the kicking team. The most frequent head-butt ing on a football field, meanwhile, occurs at the line of scrimmage, where linemen often begin in what’s known as a three-point stance: crouching and leaning forward on one hand, and then exploding upward in a meeting of crowns. Another suggestion: banning the stance and requiring linemen to squat, sumo style. And then, more important, there’s simply teaching proper tackling technique. As one recently retired player put it to me, “Instead of telling a kid to knock the snot out, you say, ‘Knock the wind out of him.’”

“The reality is you’re going to need about twenty fixes that reduce risk by a couple of percentage points each,” Chris Nowinski said. “There’s still going to be four downs. Still going to be a football. Still going to be eleven guys on the field—and touchdowns. Other than that, everything’s in play.”

Technology, naturally, is another big component of the discussion. The agenda for the Head, Neck, and Spine meeting was dauntingly ambitious and impressive, with presentations on subjects like “Finite element modelling in determining concussion thresholds” and “On-field testing of impact biomechanics.” Telemetric feedback from accelerometers may soon give trainers on the sidelines a more objective, real-time perspective on the abuse that each player is suffering, which could prove valuable in quickly diagnosing concussions. Yet, in the absence of a concussion-proof helmet, which is not looming, and will likely never arrive, there is perhaps as much to be gained from using technology to help address the necessary abstraction that allows fans to view their football heroes as characters rather than as people with families.

(Ironhead Heyward led a troubled life off the field, with alcohol-abuse issues and sporadic run-ins with the police; the news accounts somehow only made me more fascinated.) Markus Koch, a defensive lineman for the Washington Redskins in the nineteen-eighties, asked me whether it might not be more valuable to communicate real-time information about the physicality of the game to the people at home on their sofas, happily consuming Budweiser and buffalo wings. “So maybe you’d have a mouth guard that registers the impact they’re getting on the field, and at certain g-forces the helmet shell would crack and explode and leak gray matter and blood,” Koch said, only half kidding. “Or what about a whole pneumatic suit that a fan could step into, and that would be telemetrically linked to a player on the field, at seventy per cent or fifty per cent—you could adjust the dial to your liking—and actually have the fan experience what the player is going through?” Koch broke his lumbar vertebrae in his third season, and, because he was otherwise in such good shape, continued to play for three more years. He now suffers from depression, and is sometimes unable to get out of bed for extended periods. His legs go numb if he stands for too long.

Two weeks after Black and Blue Sunday, on October 28th, an honor student in Spring Hill, Kansas, returned to the sidelines after making an interception at his high school’s homecoming game and told his coach that his head was hurting. Soon afterward, he fell to the ground, suffered a subdural hematoma, and died. The next week, Jim McMahon, the ex-
quarterback, confessed at a twenty-fifth reunion of the 1985 Super Bowl champion Chicago Bears that his memory is “pretty much gone,” and that he often walks into a room without knowing why. “It’s unfortunate what the game does to you,” he said. I was reading about McMahon during a commercial break in the “Monday Night Football” game between the Steelers and the Cincinnati Bengals—a commercial break that included a surprising Toyota promotion involving football. It began with a woman discussing her worries, as a mother, about her son playing the sport: “Which is why I’m really excited, because Toyota developed this software that can simulate head injuries in an accident. . . . So, you know, I can feel a bit better about my son playing football.”

A few days later, a Cleveland Browns linebacker collapsed at his locker-room stall, after practice, in the presence of reporters, and was taken to the hospital. Shortly after that, two high-school players died on the same day—one on the field, in Massachusetts, of a heart stoppage, and the other, in North Carolina, by suicide, five weeks after suffering a season-ending concussion. The same week, two Division I college players announced their retirement, out of concerns relating to concussions, and team doctors at the University of Utah “medically disqualified” a sophomore from continuing his career.

This kind of anecdotal momentum is inherently distorting, of course. Jim McMahon added that he has no regrets, and that football “beats the hell out of a regular job.” (The fallen Brown later attributed his condition to anxiety over the impending birth of his son.) But I didn’t exactly have to go digging for it. “Now, with the Internet, we’re all talking to each other, and this is the league’s worst nightmare,” Dave Pear, the ex-Buccaneer, told me. Pear publishes a blog for “independent football veterans,” where, in addition to railing against the N.F.L.’s treatment of retired players, he tracks the sport’s latest gloomy news. I’ve also begun reading the Concussion Blog, which is written by a high-school athletic trainer in Illinois named Dustin Fink, who was moved to devote his life to the cause of player safety and awareness after suffering depression that he attributes to “many” concussions. From Fink’s research, for instance, I know that the rate of reported concussions in the N.F.L. did not decline after the stern warnings in October; it increased. Some of this may be attributable to greater conscientiousness on the part of players and medical staffs, which is a good thing, but the “disturbing” hits, as the league’s Ray Anderson called them, were just as prevalent, if not more so, as the season wore on. When I called Fink, he told me about a friend of his who plays in the N.F.L., a longtime taxi-squad member who had finally caught on as a starter. Earlier this season, the friend showed up in the concussion database that Fink compiles from news reports and other sources. “I texted him and asked how it happened,” he said. “He texted back, ‘I’m always concussed, they just caught me this week.’ ”

Fink was an offensive lineman in high school, but his own injury history clouds the picture somewhat. “I trace my first one back to fourth grade, in 1986,” he said. “I hit my head on one of the basketball uprights while playing touch football in the recess yard.” He got another one in a
fight with a classmate, in eighth grade, and still another as a high-school sophomore, when he was struck by a batted baseball while standing on the pitcher’s mound. “My most recent one was in 2006,” he said. “While I was helping out at basketball practice, I fell back and hit my head pretty hard.” His depression set in late in 2008. Only one of his concussions, as far as he knows, came from playing tackle football. So what do we blame, other than bad luck and a larger society that was slow to recognize the fragility of the human head?

In fact, reading the Concussion Blog exposes you to a steady drip of news that is not so good for your anterior insula, the part of the brain associated with worry. Rugby, lacrosse, baseball: concussions are seemingly epidemic everywhere. The problem with having access to better information about the risks we all take is that most leisure pursuits start to seem inherently irresponsible. What are we to do about skiing, bicycling, sledding?

“Hockey, by the way, has a higher incidence of concussions than football,” Dr. Maroon told me. This is true of women’s college hockey, at least, which doesn’t even allow body-checking. (Women, in general, seem substantially more prone to concussions, and explanations vary, from weaker necks to a greater honesty in self-diagnosis.) And in December, 2009, Reggie Fleming, a New York Rangers defenseman in the nineteen-sixties who was known more for his fighting than for his scoring, became the first pro hockey player to be given a diagnosis of C.T.E. Hockey may now have a concussion crisis on its hands, with the N.H.L.’s best and most marketable player, Sidney Crosby, having been blindsided during the sport’s annual Winter Classic; attempting to play again, four days later, he was drilled into the boards, and he hasn’t played since. I play hockey twice a week myself, and was once concussed, or so I now believe, while skating outside, on a frozen pond, without a helmet.

Troy Polamalu suggested soccer as an alternative for squeamish fans. But soccer players collide sometimes, too (Taylor Twellman, a forward with the New England Revolution, recently retired because of ongoing symptoms from a neck injury sustained in 2008), and the ball is harder than you think. The g-forces involved in most headers are equivalent to minor car crashes. “Twenty-five years from now, I wouldn’t be surprised to see everybody on a soccer field wearing some kind of headgear,” Michael MacCambridge said.

Still, there is an element of protesting too much on the part of football defenders when it comes to citing the risk factors of other sports. Between 1982 and 2009, according to the National Center for Catastrophic Injury Research, two hundred and ninety-five fatalities directly or indirectly resulted from high-school football. From 1977 to 2009, at all levels, three hundred and seven cervical-cord injuries were recorded. And between 1984 and 2009 there were a hundred and thirty-three instances of brain damage—not slowly accruing damage, as in the case of C.T.E., but damage upon impact. The injury incidence is far lower in most sports. And in the case of similarly treacherous activities, like gymnastics and boxing, far fewer people participate.

Some of the most effective proposed reforms seem to involve limiting contact during practice, and forbidding children to tackle until adolescence or beyond. (Developing brains are
vulnerable to “second-impact” syndrome.) “Seventy-five per cent of the hits are in practice,” Nowinski said. “You could drop the exposure by fifty per cent without changing the game at all.” You could, perhaps, but it does also make you wonder about a game whose preservation is couched largely in terms of reducing the frequency with which people really play it. The sport as it stands requires fifty men on a side just to be able to field a team once a week, for a competition that involves a mere ten or eleven minutes of live action; and the news cycle between games is dominated by questions surrounding which players are “probable,” which “questionable,” and which definitively out of commission.

“What happens if football players become like boxers, from lower economic classes with racially marginalized groups?” the ex-Chief Michael Oriard wondered. “If it gets to the point where it’s rich white guys cheering on hits by black guys and a Samoan or two, Jesus, I hate to imagine we’re indifferent to that.”

And yet we are, for the most part, already indifferent to that. Two-thirds of N.F.L. players are African-American, and the white players do not typically come from New Canaan. The sport has long had a heavy underclass or, at least, working-class strain. “Football was something you tried to play to get out of the mill,” Dan Rooney once said. The people most inclined to ask the question “Would you let your kid play football?” did not play football themselves growing up, because their parents were put off by the sport’s brutish culture, regardless of any understanding of brain science. “Any parent who has let their child play football in the past fifty years and claimed never to have understood the risks involved was either kidding himself or an idiot,” Buzz Bissinger, the author of “Friday Night Lights,” wrote last week in the Daily Beast. Dustin Fink, on the other hand, told me that he would have no problem allowing his five-year-old boy to play, given the current level of medical awareness.

How many of the men on the field in the Super Bowl will be playing with incipient dementia? “To me, twenty per cent seems conservative,” Nowinski said. C.T.E., as of now, can be observed only with an autopsy. The ability to detect it with brain scans of living people is at least a couple of years off. “It’s not going to be five per cent,” Nowinski went on. “The reality is we’ve already got three per cent of the brains of people who have died in the last two years confirmed, and that’s not alarming enough to people. What number is going to be the tipping point? People are O.K. with three per cent. They may look sideways at ten per cent. Maybe it needs to be fifty per cent.”

A race to collect cadaver brains is now under way, with Bennet Omalu, the original discoverer of C.T.E., leading one group, out of West Virginia University. Ann McKee, a co-director of Boston University’s new Center for the Study of Traumatic Encephalopathy, is a leader of the other group. The Boston University center, which is aligned with Nowinski’s Sports Legacy Institute, received a million-dollar donation from the N.F.L. last spring, and Nowinski returned the favor by honoring the league’s commissioner, Roger Goodell, with an “Impact” award last October, three days after Black and Blue Sunday. Omalu is from Biafra,
and has no personal connection to football. He is often the more strident critic, and prone to making antagonistic remarks about his fellow-doctors for their slowness to accept his findings. McKee, on the other hand, is “a longtime football fan,” as Malcolm Gladwell noted in these pages in 2009. Each group sees its relationship to the game as a plus: true independence, on the one hand, and a connection to the people who can make the biggest difference, on the other. Competition, in any case, is always good.

Like nearly everyone else I talked to, Nowinski, the former wrestler, made sure to absent himself from any moral determination about the game’s future. “I used to go through tables for a living from the top ropes,” he said. “I’m a firm believer that adults should be able to decide for themselves.” Dustin Fink’s Concussion Blog comes with a disclaimer—“IN NO UNCERTAIN TERMS DO I BELIEVE THAT WE SHOULD OUTLAW OR ‘WUSS DOWN’ CONTACT SPORTS!!!”—that begs a question few people are really willing to ask. The campaign to ban boxing has been going on for decades—the Times endorsed the idea in 1967, and the American Medical Association lobbied for it in 1983—to no avail. Boxing has a bigger problem: it has slipped into cultural irrelevance.

As for football’s fate, “I don’t think it’ll be driven by public opinion, but by lawyers and insurance companies,” David Meggyesy, who played linebacker for the St. Louis Cardinals in the nineteen-sixties, told me. Meggyesy was put off by the sport’s cultural overlap with American imperialism, as he saw it, and wrote a book, “Out of Their League,” that served as football’s “Ball Four”: a startling exposé that reads, a generation later, as largely unsurprising. He wrote, “When society changes the way I hope it will, football will be obsolete.” He also mentioned to me in an e-mail, not long ago, that he had reacted with “big pride” when his rugby-playing daughter confessed to him, “You know, Dad, I really love to hit.” The tension is within us all. But with new medical evidence may come new legal risk and liability, and recalibrated insurance premiums, for schools as well as for individuals. “Football may go the way of gymnastics, where these private entities will come forward and have teams,” Meggyesy said, envisioning a scenario in which the social pecking order at American high schools is not driven by quarterbacks and their doting cheerleaders.

“There’s a potential lawsuit out there that’s devastating,” the Steelers Hall of Fame quarterback Terry Bradshaw said on Fox’s pregame show, the weekend after James Harrison threatened retirement. I know of two groups of lawyers preparing class-action suits, on behalf of recent players, against the N.F.L., with an eye toward filing in the first six months of this year. At issue is what the league knew and when, and, ultimately, what responsibility it has to its players, with a likely focus on the difference between two documents that were distributed in locker rooms as safety guidelines. The first, a pamphlet written in 2007, left open the question of whether “there are any long-term effects of concussion in N.F.L. athletes,” while the second, a poster that was introduced before the start of this season, mentioned that “concussions and conditions resulting from repeated brain injury can change your life and your family’s life
forever.” Trial lawyers, tort reform, the nanny state: this is no small part of football’s future. The N.F.L.’s idea of a “good football story,” to judge from the Twitter feed of Greg Aiello, the league’s spokesman, is one that calls attention to the uptick in passing touchdowns this year: more points, fewer hits. The league is nothing if not serious about its messaging. It was unhappy with the Toyota commercial that aired during “Monday Night Football,” and urged the automaker to alter the spot. (Toyota complied, and excised a scene dramatizing a helmet-to-helmet collision.) Earlier this month, the league also issued warnings to several teams about midweek trash talking, of the “His days are numbered” variety.

Buzz Bissinger, who came away from his yearlong experience reporting “Friday Night Lights,” in Odessa, Texas, in 1988, with a strong sense that the priorities of football culture were warped, declared in his Daily Beast column that he had since changed his mind. “It may be time for the Times to move on,” he wrote. “Violence is not only embedded in football; it is the very celebration of it. It is why we like it. Take it away, continue efforts to curtail the savagery, and the game will be nothing, regardless of age or skill.” Tiki Barber, the former Giants running back, and a man who boasted, in his playing days, of listening to the BBC, voiced a surprisingly similar sentiment when I spoke with him last fall. “They can’t try to do more,” he said. “They can’t afford to change what it is: an aggressively fast, physically brutal game.” He added that he believes he will die with traces of C.T.E. in his brain tissue; he now views C.T.E. as “a necessary side effect of contact activity. . . . It’s scary.”

I’m not so convinced that violence fully explains football’s popularity as a spectator sport, or that the language of war that suffuses the game (blitz, bomb, sack) is meaningfully connected any longer to actual, rather than notional, bloodlust. The game is more narrative than any other. It unfolds at a pace that is at once slow enough for us to unpack (we spend more time watching replays than watching the live action) and fast enough, in bursts, to rattle our nerves. Go to YouTube and search for “Austin Collie 3rd Concussion.” Look at the faces of the fans, many of them with their hands instinctively covering their mouths, as medics attend to the felled Indianapolis Colts wide receiver. Those aren’t expressions of morbid curiosity. They reflect a guilty fear that, one of these days, millions of us are going to watch a man die on the turf.

To my mind, the most exciting moment in this football season was not a demonstrative QB sack or a bruising, Ironhead-like run, or even a perfectly executed Hail Mary, but a punt return. The recipient of the punt was the Eagles’ DeSean Jackson, one of the most flagrant victims of Black and Blue Sunday, and the victim, a year earlier, of a concussion that sidelined him for a week. There were fourteen seconds left on the clock in a tie game against the Giants, in December. That the Eagles were still in the game at all was an almost miraculous testament to the acrobatic exploits of their quarterback, Michael Vick, who had led them forward from a twenty-one-point deficit with only eight minutes left in the game. (Vick’s season-long redemption after going to jail for promoting dogfighting was the uplifting counterweight to Concussiongate.) The Giants meant to kick the ball out of bounds, but somehow didn’t. Jackson
bobbled the ball at his own thirty-five-yard line, and you winced with instinctual worry; he is, at a hundred and seventy-five pounds, one of the smallest men in the N.F.L. The Giants’ gunners—so named because their job is, in essence, to impersonate speeding bullets—were closing in.

Instead of falling on the ball—the safer option—Jackson picked it up, and quickly retreated to the thirty before turning to face upfield again, with a fraction of a second’s worth of room to accelerate away from trouble. The first defender dived at his feet and missed. Then Jackson cut right. Another dive. Another miss. He found a seam running diagonally toward the sideline. Suddenly, as he hit the fifty, the field opened up in front of him. Could this really be happening? The only question now involved the clock: would he reach the end zone before it expired, thereby requiring his own team to kick back the other way for an encore? Jackson raised the ball in the air and began to slow down. Finally, just to make sure, he made a sharp left in front of the goal line and began running parallel to it, indulging the stalling maneuver for long enough so that it could no more be thought shrewd. This was hubris, of the sort that ends up getting a small man hurt.

It’s all there in the replay: the exuberant Jackson hurling the ball twenty rows deep into the stands; the angry Giants coach, Tom Coughlin, throwing his headset in disgust and tearing into his dumbfounded rookie punter; the blocked tacklers lying on the field like fallen soldiers. Setting aside regional partisanship, you don’t root for the man carrying the ball to be tackled at moments like this. You stop breathing and root for the near-miss. Averted danger is the essence of football.

But what if he’d been clobbered? And what if some of those blocked tacklers whom we laugh at are hearing bells and are too ashamed to admit it? ♦