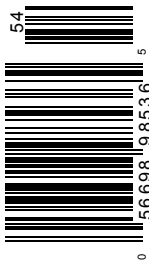


Cabinet

A QUARTERLY OF ART AND CULTURE

ISSUE 56 SPORTS

US \$12 CANADA \$12 UK £7



KEEPING SCORE

Christopher J. Phillips

In late July 1846, the Knickerbocker baseball club won a game by the score of 31–22. The contest was largely meaningless, played between members of the New York club to hone their skills. The Knickerbockers did, however, keep score. Not just tallying runs, but also creating statistics: when players batted and which ones did so successfully, when runs were scored and the players who scored them, when outs were made and the players who made them. Playing baseball meant creating data.

Baseball fans—and sport fans more generally—know this story, even if the particulars are unfamiliar. Baseball is a numbers game. And while the Knickerbockers kept paltry records compared to those that emerge from Major League Baseball games now, they were acting in the same vein. To evaluate ability, understand strategy, and improve performance, you need data. As has been claimed for decades, one essential feature, if not the defining feature, of modern sports is that they are quantified and measured. Baseball in particular is well suited to numbers. It's amenable to mathematical modeling. It's a game of inches. It's a game of statistics.¹

This conclusion is doubly misleading. It implies that there is something natural about statistics in sports like baseball. As if keeping score were just part of playing the game. True, participants do often care who wins. But data aren't simply the intellectual residue of sporting contests, collected after the fact as a matter of course. They are also physical, material things that must be manufactured, curated, and maintained.

The conclusion also belies the historicity of numbers: baseball's statistical origins were inseparable from nineteenth-century ideas about scientific progress, about attempts to make games and exercise scientific and “manly.” Numbers are nothing if not fungible and flexible, able to travel efficiently across time and space, but numbers don't carry their interpretation along with them. Over the twentieth century, quasi-legal gambling and the proliferation of fantasy leagues have made sport statistics into big business. In the twenty-first century, the “moneyball” phenomenon has made baseball statistics emblematic of the triumph of objective, data-driven

knowledge over tradition-bound expertise.² As is the case with so much of the bluster surrounding big data and informatics, however, there's been little thought given to the physicality of statistical data, and to the people and material technologies by which they were made. Every time fantasy league participants check the standings, they unknowingly draw on this long history of keeping score.

. . .

Long before “score” referred to musical notation or game statistics, it indicated the creation of a physical mark. Early cricket scorers were called “notchers” because of the indentations they made in sticks to record runs scored by each side. If some form of scoring has accompanied sports from the year dot, scoring practices and tools have greatly expanded in the last two centuries. This was especially the case in the English-speaking world, with the codification of elaborate scoring practices in cricket, billiards, and horse racing. Late eighteenth-century cricket matches, for example, utilized official scorers, with full regalia and a host of technologies at hand.

By the 1840s, American baseball clubs—decades before the sport's professionalization—similarly appointed scorers to maintain records of performance. There are extant scorebooks from the Knickerbocker Club of New York as early as autumn 1845, and of many more clubs starting in the 1850s. The clubs were often more concerned with fraternization than competition, and games were often played solely for recreation. Nevertheless, the scorebooks were elaborate and expensive productions. Some clubs kept two books; one to note the score in pencil during games, and a second leather-bound and finely decorated volume for transferring the inscriptions to a more permanent state. The scorer himself assumed pride of place in these volumes, analogous to the secretary of a scientific or academic society. Keeping score was a part of the records of the clubs as much as of the games, and minutes from club meetings were occasionally intertwined with the scores inside these volumes.

The man who did more than anyone else to transform this early practice of baseball scoring was

left: Page from the 1858 scorebook of the Lawrence Baseball Club, Lawrence Scientific School, Harvard University. Courtesy Harvard University Archives.

opposite: 1870s diagram from *DeWitt's Baseball Guide* showing Henry Chadwick's recommendation for the positioning of the two scorers.

Second Game. November 11th 1858.

F. W. Putnam - W. & E. Delgado - S.

Captain F. Washburn.

P. Reynolds. C. Casares 1st B. Evans.
2^d B. Bowditch 3^d B. Johnson.

	1 st in	2.	3.	4.	5.	6.	7.	8.	9.	Total
F. Washburn	—		c.o.			c.o.		1.	1.	2.
P. Reynolds	—		c.o.			—		1.	c.o.	1.
C. Casares	c.o.			1.		—		1	—	2.
1B Evans	c.o.			c.o.		c.o.		1.	c.o.	1.
2B Bowditch	0.			c.o.			1	c.o.		1.
3B Johnson		c.o.		c.o.			0.	1		1.
4F Ordway		—			c.o.		0.	—		0.
5F Byrdon		c.o.					—	—		0.
6F Herschel		c.o.			c.o.		c.o.	h.o.		0.
7B Johnson			1.		h.o.			1.	0.	2.
8F Bennett			c.o.			c.o.		c.o.	1.	1
Totals of in ^{ts}	0	0	1.	1.	0		1.	6	2.	11.

a transplanted Englishman, Henry Chadwick. A reporter for various New York and Brooklyn papers starting in the 1850s, and author of dozens of introductory guides to the game, Chadwick was one of the dominant promoters of baseball in the nineteenth century. He insisted leagues require every club to supply its own scorer to games, even specifying where scorers should stand among the other participants. He was the first to publish statistical performances of individuals and teams, and insisted on statistical evidence for proposed modifications to the game's rules.

Chadwick fashioned himself politically progressive, and he believed proper scorekeeping was essential to the scientific improvement of sports and games. He kept detailed accounts of tennis, cricket, and billiard games, even publishing manuals advertising his various scoring systems and

patented score-sheets. Starting in 1860, Chadwick kept meticulous records of nearly every baseball game he observed. Sometimes this was as a scorer for a club, but most often as a member of the press. He incessantly proposed “improvements” to the game throughout his life—apparently annoying contemporaries to no end—but doing so was part and parcel of his belief in the scientific perfectibility of all things. As he expressed in 1868, he knew his suggestions were worthy because he based them on “facts and figures derived from actual observation and from a statistical analysis of the result of each season’s play.” Chadwick was one of many similar scientific reformers in the mid-nineteenth century—from Adolph Quetelet to William Farr and Francis Galton—who claimed their authority through statistical analysis. Chadwick’s claims took a form that was and is a standard ploy of those who keep data:

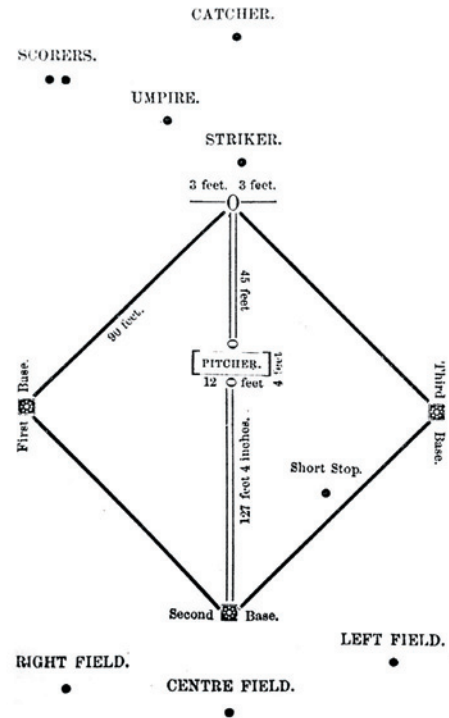
the only way to challenge his assessments of the game was to keep “an equally detailed analysis.”³

Chadwick’s particular system of scorekeeping had roots in two practices: public health and accounting. Chadwick’s older English half-brother, Edwin Chadwick, authored one of the foundational documents of the field of public health, the 1842 *Report on the Sanitary Condition of the Labouring Population of Great Britain*. Following his and Henry’s father, a fierce Benthamite and close associate of the radical Lord Henry Brougham, the elder Chadwick substituted statistical analysis for medical judgment as the central discipline for understanding the problems of public health. The Chadwick brothers—separated by distance but not by philosophical inclination—believed that progress could be made and measured only after statistics were collected and analyzed. Accurate and consistent statistical records should trump the specialized knowledge of practitioners. As Henry Chadwick concluded, “In time, the game will be brought down almost to a mathematical calculation of results from causes given; but, at present, it is merely in its experimental life, as it were.”⁴

If Chadwick’s statistical philosophy derived from public health, his material practices originated in accounting, specifically double-entry bookkeeping. The rules of baseball afforded a team three outs in each of nine innings, and if a batter did not record an out, then he either scored a run or was left on base. Chadwick’s system enabled scorers to sum totals across the rows for individual performance, and down the columns for team performance. Since the sum of individual performances should always match the total team performance, this system facilitated a quick check of the arithmetic. Summing the number of “outs,” “runs,” and players “left on base” provided a total count of offensive events—and simultaneously a measure of defensive events for the other team. The same occurrence was noted on both offensive and defensive sides of the ledger. One team’s “hit” was the opponent’s “hit allowed.” Credits to one were debits for the other.

The baseball score-sheet was not just a statistical summary: at its heart was a system for recording action as it happened. As Chadwick explained, correct data emerged from a method of shorthand recording of movements. The score-sheet was a

Diagram of a Base Ball Field; Positions of Players and the Measurements for Laying a Field Out.



technology of inscription, enabling the complex interplay between people and objects to be reduced to marks on paper. Chadwick noted not just that players were out, but who made the out and in what way. A system of crosses marked kinds of hits, with notations specified for errors—“muffed plays” made by “muffins” in contemporaneous baseball jargon—and for excellent plays. His notation indicated where on the field an out was made and by whom, as well as the “character” of the play: dots for runs scored, letters for method of out made (fly ball, on base, etc.), large numerals for the sequential number of outs made, small numerals for specifying defensive players involved.

Chadwick’s boast of giving a “complete analysis” was obviously hyperbolic. No inscriptions are complete and despite his salesmanship, his system ignored much of what happened during games. He made no attempt to indicate sounds, or players’ intentions, or the precise order in which events happened, or any action that didn’t directly contribute to one of his statistical measures. He compared his system to a reporter’s shorthand, a technique for recording speech that deems irrelevant much contextual information. When keeping score, the

SCORE OF THE <i>Albion</i>										Base Ball Club OF																			
BASE RUNNING.		BASES MADE BY FIELDING ERRORS.		BASES MADE BY BATTERS.		TOTAL SCORE OF		TIME WHEN PLAY WAS CALLED.		PLAYED AT		TIME WHEN GAME WAS CALLED.		POSITION OF PLAYERS.		GOOD PLAYS IN THE FIELD.					TOTAL TIME OF GAME.								
Clear Home Runs.	Left on Bases.	By Bats.	Made & Caught with Bats. Throws.	No. of Bases.	No. of Times.	Outs.	Runs.	BATTSMEN.	1	2	3	4	5	6	7	8	9	10	NUMBER OF EACH PLAYS.	FIELDERS.	On Base.	On Fly.	On Foul.	On Ball.	Out.	Strikes.	Runs.	Errors.	NO. OF TIMES ASSISTING.
		3	3	4	2	Pearce			4										1	Rogers	1	..					2		
		1	1	4	0	Brown			5										2	Cummings	9						0		
		2	2	3	1	Glast			3										3	Wardlaw	5	..					2	..	
		2	2	3	1	Chapman			4										4	Wood	10	..					3		
		2	1	3	2	Garrison			5										5	Jewell	6			7		
		2	2	4	1	Green			6										6	Chapman	2	..					3	..	
		2	2	2	2	Zellman			7										7	Nale	1	..					9		
		6	3	1	3	Pike			8										8	Wardlaw	3	..					1	..	
		3	2	3	2	McDonald			9										9	Johnson	10						0		
23	18	27	14	Total Runners Inning..				0	0	1	0	0	4	0	7	2			Total Score		11	9	4	3	0	0	27	10	
Grand Total each Inning.								1	1	1	5	5	12	14															

movements that count are the ones that figure in desired statistical measures.

Chadwick promoted a system that, above all, was concerned with making visible and accountable the apportioning of credit and blame. He clearly divided “good” plays from those involving “errors” on his score-sheet. The data revealed whether players typically reached base because of their own efforts or whether such bases were a result of opponents’ failures—making the score-sheet into what historian Jules Tygiel called “a series of mini-morality plays.”⁵ Chadwick did not distinguish scientific progress from moral progress; his score-book was a record of moral credit.

Above all, the scorer had to be a credible person himself. As the creator of data and the evaluator of skill, he was in a position of power. Chadwick encouraged clubs to employ only scorers who were “thorough gentlemen” and “true men,” for a scorer must “decide a point according to his honest and unprejudiced opinion.”⁶ Skilled inscription practices were necessary but not sufficient. Scorers also had to be capable of fine moral judgment.

Even when such honorable men were selected, scorers were employed by clubs and thus, Chadwick feared, “involuntarily biased by their connection.” The solution was to publish standards—and Chadwick volunteered himself. For, when “doctors

disagree,” an “outside individual, who is removed from party bias, must step in and decide the disputed point.”⁷⁷ Chadwick repeatedly set down guidelines for what should be credited to whom—whether bases on balls were a credit to the batter for his patience or a debit to the pitcher for his failure; whether a ball was muffed because of defensive inability or simply mishandled because of successful hitting. There was nothing easy about scoring, and nothing mechanical about the creation of baseball data. Any claims to the “objectivity” of data were a product of both inscription technologies and trained judgment.

Chadwick's efforts were not geared toward the private collection of data. Rather, he intended his efforts to be a visible model of data analysis. He marketed his score-sheet and promoted his scoring technique extensively. He was most successful in promoting his methods, however, once he deployed the power of the press. As early as 1859, he was using his regular column in the *New York Clipper* to publish batting averages for clubs and individual players. He wanted to "call the attention of the Base Ball community to the importance of having an analysis of the season's play published at the close of the year, as thereby not only the estimate of each player's skill can be made, but the progress made in the game itself will be indicated."⁸ Chadwick's analysis eventually included a variety of statistical measures, from the length of game and the now-standard batting average to the still-obscure number of innings played without scoring a run.

Above: Page from Chadwick's own scorebook, 1863.
Courtesy Albert G. Spalding Collection, New York Public
Library.

Fans as early as 1861 debated the relative merits of players on the basis of their statistics. “Box scores”—simple records of runs scored by team and by player—had been printed in newspapers even before Chadwick started reporting on baseball, but by the 1860s, Chadwick’s incessant needling had pushed newspapers to publish tables of “Fielding” and “How put out” in addition to the scores. Reporters continued to give full prose accounts of important games or unusual situations—the numbers never replaced narration—but baseball coverage now included a statistical summary of each game. Newspapers like the *Clipper* could only publish “analyses” if sufficient data existed, Chadwick warned, and for an “accurate estimate of a player’s skill” an analysis of both his play in the field and at bat was required. For this purpose, Chadwick conveniently supplied his own statistical summary form to clubs.⁹

The *Clipper*’s year-end awards in the 1860s not only spurred passionate debates about how to value one statistical performance over another, but also forced clubs to maintain their own statistics accurately. Otherwise, players simply wouldn’t be included in season-ending summaries. One could always choose not to keep score, but at the cost of rendering oneself invisible.

Thanks in large part to Chadwick, detailed scorebooks, year-end analyses of data, and statistical records all predated the establishment of professional baseball. By the time the first professional leagues were created in the 1870s, in fact, the only substantial remaining change was to bureaucratize the process—another form of “progress” for proponents. Professional leagues began contracting directly with newspaper reporters to act as league scorers. This link was formalized in the early twentieth century when the Base Ball Writers Association of America contracted with the major leagues to ensure that only its members could be hired as official scorers. This meant, of course, a ready supply of cheap (writers are already at the ballpark) and generally experienced people to act as scorers. It also meant, however, that scorers’ traditional role as gentlemen club members was traded for one as a member of the press. Leagues also created giant ledgers—known as dailies, or day-by-days—each page of which was devoted to a player or team. After

a game, the scorer mailed a statistical summary report to the league office and a new statistical line for each player was inscribed in the ledger, and then summed at the end of the year to create the statistical records.

The new bureaucracy meant that there were now official—“of the office”—records, in addition to the sometimes-conflicting tallies published by newspapers or individuals. Since newspaper reporters filled the ranks of official scorers, the line between official and unofficial statistics continued to be blurry. The difference lay in the ownership and maintenance of data, rather than their creation. And keepers of official statistical data, like the keepers of other scientific standards in the nineteenth century—the meter, the ohm—had the ability to resolve disputes, establish protocols, and award laurels. The distinction between official and unofficial statistics may have been formal, even arbitrary, but was nonetheless powerful.

The appointment of reporters as official scorers confirmed that no special training was required. Anyone could keep score. Indeed, as early as the 1860s, fans were filling in scorecards during games, making their own judgments about credit and blame. They could, of course, align them retrospectively with the statistical summaries published in newspapers or the league records, but there was no need to do so.

No one owned the statistical data—fans might profit from their own record keeping, from data concerning others’ exploits. Statistical records took on a lucrative life of their own, deployed on the backs of baseball cards, within tabletop games like Strat-O-Matic, and in fantasy leagues. (The legality of such profits was reaffirmed within the last decade in *C. B. C. Distribution and Marketing v. Major League Baseball Advanced Media*, the upshot of which was that not only can fans publish non-official statistics, but they can also profit from them.)

This arrangement of official and unofficial records remained virtually unchanged through the first half of the twentieth century. Critics have always pushed back on official records—scorers displaying bias, disagreements about how to deal with rule changes affecting statistical records—but it would be a new development in the materiality of data collection that prompted an unprecedented challenge to their authority. Starting in the 1960s,

fans with access to, and training on, electronic computers began to input official records and create what would come to be known as spreadsheets. It didn't take long—that is, once the data had been painstakingly entered on punch cards—to realize that the official records were riddled with addition errors. Summing up daily totals for players did not reliably yield published year-end totals. The number of runs scored by a team during a season would differ from the sum total of runs scored by all players on that team. Chadwick's insistence on balanced, symmetric score-sheets provided a basis for these judgments. The physicality of baseball data was now, however, increasingly associated with the military, rather than with public health or accounting—one celebrated critic built his own database of baseball statistics using computing time normally devoted to an Alaskan radar tracking Soviet missiles.

Mid-century critics posed the problem as one of historical evidence, rather than mathematical analysis. They questioned the material record: What was kept, and in what way? They discovered what they considered to be errors of inscription where records for two different players had been transposed on league ledgers; errors of interpretation, where a scorer had credited an earned run or a stolen base when the rules indicated otherwise or had changed over time; and errors of transmission, where an official scorer's report failed to match any of the newspaper accounts of the game.

A non-profit, all-volunteer effort called Retrosheet was eventually formed in the 1980s to do the seemingly simple but extraordinarily difficult job of creating play-by-play accounts and box scores for past games consistent with official accounts.¹⁰ Official league records had generally included only statistical summaries for players and teams, not accounts of how individual games

unfolded. Retrosheet's volunteers dug out microfilm of historical newspapers, archived radio and television recordings, and old score-sheets from reporters and fans. Their difficulties were material, not intellectual—discarded team records, radio broadcasts' ephemerality, misplaced scorebooks. And their solutions were technological, based around code for entering games into computers, and alerted users when statistics were alarmingly asymmetrical or logically impossible. Even with access to official statistics, it took them nearly fifteen years to compile box scores of games going back to 1914. Retrosheet's code was also suited to recording action in real time, and the software of the current powerhouse of statistical analysis, Major League Baseball Advanced Media, was built by some of the same people, using some of the same code. Likewise, baseball-reference.com, one of the current go-to sources for everything statistical, is built on the very database created from the time borrowed from Soviet missile tracking.

This is the largely forgotten part of the so-called analytical revolution in sports, the revolution underlying much of modern professional sports' fascination with statistical measures, and their use in scouting, salary negotiation, and strategy. The whole story depends on the materiality of data and the labor of its collection and management. There's plenty to count in football and basketball, soccer and volleyball, but people didn't make statistical records and the inscription of bodily movements an essential part of understanding these games until quite recently.

The claim that there are analytical approaches to questions of strategy and skill depends implicitly on human labor and material technologies, though the modern data magicians usually give very little credit to them. Baseball may be a numbers game, but only because of a shared historical practice of keeping score.

1 Allen Guttman, *From Ritual to Record: The Nature of Modern Sports* (New York: Columbia University Press, 1978); Alan Schwarz, *The Numbers Game: Baseball's Lifelong Fascination with Statistics* (New York: St. Martin's Press, 2004).

2 "Moneyball" was a concept popularized by Michael Lewis in his 2003 bestselling account of how the Oakland Athletics used

innovative data analysis to succeed in Major League Baseball despite severe financial constraints. See Michael Lewis, *Moneyball: The Art of Winning an Unfair Game* (New York: Norton, 2003).

3 Henry Chadwick, *The Game of Baseball* (New York: George Munro & Co., 1868), pp. 11–12.

4 Henry Chadwick, *The Game of Baseball*, p. 69.

5 Jules Tygiel, *Past Time: Baseball*

as History (New York: Oxford University Press, 2000), p. 25.

6 Henry Chadwick, *Base Ball Player's Book of Reference* (New York: J. C. Haney, 1866), p. 30, and "Base Ball: Instructions in Scoring," *The New York Clipper*, 23 March 1861.

7 "Base Hits and Earned Runs" in Chadwick Scorebooks, vol.

5, Spalding baseball collection, Manuscripts and Archives Division,

The New York Public Library.

8 Reprinted in Chadwick Scrapbook, vol. 1, Spalding baseball collection, Manuscripts and Archives Division, The New York Public Library.

9 See, for example, *Beadle's Dime Baseball Guide for 1861* (New York: Beadle and Co., 1861), pp. 58–60.

10 Still available and ongoing at <retrosheet.org>.

The scoreboard as entertainment. The Coleman Lifelike Scoreboard, seen here in 1924, had made its debut at the National Theater in Washington eleven years earlier. The technology offered a way to present for a live audience in real time a game happening elsewhere. The picture below shows the audience's view of a translucent sheet on which players were depicted in various positions on the field. While listening to a narration of the game, the audience would see the pertinent players illuminated by the backstage lighting rig, seen at right, in order to give a visual interpretation of the play. Courtesy Library of Congress.

