Introduction:

AN IMPROBABLE PERSONAGE

When I get my hand in sufficiently I think I will write “Karl Pearson, a Tragedy.” Can anything be done to rescue you from your professorship?
—George Bernard Shaw to Karl Pearson, 20 June 1893
(Pearson Papers 627)

BEGINNING IN 1892, when he took up statistics as his scientific vocation, Karl Pearson devoted himself relentlessly to a project of almost universal quantification. This work, the invention of a mathematical field of statistics, defined one of the landmark transitions in the history of the sciences, or indeed of public rationality. Until then he had been a thoroughly restless intellectual, as involved in politics, literature, and history as in science. These studies and experiences set up his wide-ranging career as a quantifier, and at the same time created conditions for enduring doubts about this mission, to which he thereafter dedicated his career, and about the form of society it helped to fashion. Having sought through philosophy, history, marital partnership, scientific method, and statistics to discipline and socialize the egoistic self, he came increasingly to fear that the modern project of specialized science would fragment selfhood and suppress individuality.

When Pearson was twenty-three, in 1880, the autobiographical Arthur of his novel The New Werther effervesced to his lover, Ethel: “What meaning has the word ‘kiss’ to him who does not know that through the electric contact of a moment two fiery souls may feel united for an eternity? What meaning has the word ‘life’ for him who has only existed in order to hand down his name to posterity in the footnotes of a classic or as inventor of an integral?” Half a century later, as his wife (he thought) lay dying, he recalled his grand scientific ambitions and pronounced his career a failure. “Twenty years hence a curve or a symbol will be called ‘Pearson’s’ & nothing more remembered of the toil of the years.” In this his most tragic voice he ascended to prophecy, for this “Pearson” has survived primarily as the name of a correlation coefficient. Forgotten is not only a complex individual, but also the historical mood, the ethical and political aspirations,
the literary and philosophical sources, and the scientific vision that brought into being this technical art, which in the twentieth century would reconfigure scientific and social reason.¹

As revolutions devour their children, so science has meant the compres-
sion of memory. Artists and authors are at least memorialized by their works, which may then be linked to the circumstances of their lives and times. The sciences reduce even their most eminent men and women to a few discrete discoveries, a single dimension. The legitimacy, perhaps even necessity, of forgetting is often seen as concomitant to scientific progress, and statistics in the twentieth century has been integral to this aspect of the scientific identity. Pearson, who was unfailingly attentive to the past, recognized this characteristic of the institutions to which he devoted his life, and lamented it. In later life he devoted much attention to the history of his field. Beginning in his youth he wrote a series of more-or-less disguised or fictionalized autobiographies, stories of a dissatisfied man with grand ambitions, later the apostle of a new faith. He preserved an immense fund of documents, whether flattering or not, among the most extraordinary of which is the letter just mentioned, addressed to his sister-in-law, Elisabeth Cobb. In it he summed up his career and his marriage, both as tragic failures. “Please destroy,” it begins, followed by a salutation: “My dear Bessie, I want you when you have read this to destroy this at once. I should not like it to come by accident into any other person’s hands and you must let me know that you have destroyed it.” Below his signature he reiterated, “As I have said, destroy at once.” But she never had the opportunity. At the top of the last page, in thinner script, we find: “Never sent. K. P.”

From youth on, Pearson’s acquaintances often characterized him as cold, emotionless, and rationalistic. In view of his fierce intellectuality and disposition to theorize about everything from religious faith to sexual love, it was a pardonable misperception. Yet he cultivated also—and he wanted the world to know—a different self, one that pondered deeply and suffered, living a life that he alternately imagined as tragic and as triumphant, but that in any case was formed against a background of fateful social and intellectual change. Most of the time he was self-consciously in revolt against the dominant tendencies of his age, yet in retrospect he has seemed often to epitomize some of its less attractive features, especially by his faith in eugenics. An opponent of all compartmentalization, he was a strong advocate of cultural history, which for him was made up of folklore, religion, economy, labor, art, and science, of emotion and reason, none separable from the others. He saw his own life in these terms and deliber-

¹ “Loki” [Karl Pearson], The New Werther, 4; KP to Elisabeth Cobb (unsent), 2 April 1927, Pearson Papers 9/6.
ately left behind its traces, from which his younger daughter, Helga, later gathered up, organized, and annotated a vast collection of letters and other documents. Through these papers his intense commitments and wide-ranging intellectual ambitions can be reconstructed, and with them, some of the richness of his connections to his age. We are reminded that rationality, even in its guise as calculation, does not reduce to scientific and administrative routines. In Pearson’s life we experience it in a scene of personal cultivation and social struggle, where it has inspired the fiercest of passions.

Pearson’s research interests were almost bewilderingly disparate. He was sometimes proud of the range of his scholarly activities, but he also worried of falling into dilettantism. He wanted badly to believe that there was some coherence to it all, or at least to the trajectory of his development. For contemporary humanistic scholarship, which adores fragmentation and is skeptical of unitary “metanarratives,” his self-conception must appear largely as wishful thinking. Indeed, no life achieves full coherence, and his centrifugal tendencies were stronger than most. Yet Pearson was right. My aim here is to examine the ways that it all holds together—how, for example, the author of an unsuccessful “nineteenth-century passion play” left his imprint on the philosophy of scientific method and even on statistics.

After trying out a sequence of possible careers and displaying vast iconoclastic ambition in each, Pearson made his mark in what seems one of the more mundane areas of modern life. He endeavored to provide appropriate tools of measurement and calculation for the quantitative analysis of social and scientific problems. This statistical project has been a curious and paradoxical one. It has brought forth many prophets and missionaries—calling for a great reformation of scientific or practical life, and working to reshape a discipline or a professional practice—but no saints. It has never been personified, at least not to a larger public. Pearson himself preached impersonally on behalf of “Saint Biometrika,” and in his gloomy letter to Cobb he explained that his ambition had been to establish “a new tool in science which would give certainty where all was obscurity and hypothesis before.” It seemed a thankless task. “I have made many enemies and few friends in the process for I was upsetting old idols and endeavouring to replace them by new gods whom scientists of the old training would not accept.”

For this unrelenting controversialist, statistics meant battles unceasing against numberless opponents for methods that, as he thought, must in the end prevail because they were right, and because the future would

2 KP to Florence Joy Weldon, 19 Oct. 1906, Pearson Papers 266/8; also KP to Cobb (see previous note).
require them. He also made many enemies from within the camp of statistics, most notably the equally acerbic Ronald Aylmer Fisher, who, by the brilliance of his work and the scorn of his commentaries, contributed to the dimming of Pearson’s reputation among his disciplinary heirs.\(^3\) Few outside the field have recognized the extent of disagreement and controversy within it, and so few have been able to appreciate the richness and contingency, the fierce emotions and vaulting ambitions, that have characterized its history. It is a story full of ironies, of an enterprise that was created to manage the chaos of chance, and to answer by measurement and calculation what others could only debate.

**TELEOLOGY AND PURPOSE: HISTORICAL IMPLICATIONS**

The statistical project, Pearson’s endeavor, has not been passed over entirely by the historical gaze. Statisticians are no less interested in the history of their field than most other scientists, and there is by now a wealth of serious historical research from various perspectives on its development. The ideas and practices of the eighteenth and nineteenth centuries, when governments and reformers imposed quantitative order on unruly populations, have been particularly interesting to historians and social scientists.\(^4\) In the twentieth century, the role of mathematics has become increasingly decisive, and studies of these new statistical tools and practices are gradually being written, episode by episode and discipline by discipline.\(^5\) In the end, a picture will emerge of a powerful body of mathematics, allied to schemes for gathering data and designing experiments, that has become one of the most important sources of scientific expertise and guarantors of objectivity in the modern world. It is the narrow gate through which must pass new pharmaceuticals, manufacturing processes, official measures of all descriptions, and the empirical findings of psychologists, economists, biologists, and many others. In that sense, its import goes far beyond the history of a mathematical discipline. Statistics has functioned as no narrow specialty, but as a vital if often invisible element in the cultural history of government, business, and the professions, as well as of science.

In some sense this is widely understood, though more often by social scientists than by cultural or political historians. Sociology has a body of theory ready-made for explaining developments of this kind, one associ-

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\(^3\) Gigerenzer et al., *Empire of Chance*, chaps. 3, 7; MacKenzie, *Statistics in Britain*.


ated particularly with the name of Max Weber, which presents a process of “rationalization” as intrinsic to modernity, and identifies science and bureaucracy as its standard-bearers. From this perspective, the development of quantitative methods is readily seen as important, but also as natural and even inevitable. The reconstruction of history as teleology has to some degree been the fate of all the sciences, whose stories continue to be told in textbooks and journalism as epics (or often mere lists) of theoretical and experimental advances. Even if this were an adequate way to write the internal history of science (most historians of science these days think not), there is nothing inevitable about its cultural and political role.

The very boringness, as most people suppose, of quantitative methods testifies to their pervasiveness and to a common assumption that their application is virtually automatic. Yet their success was never easy or routine, but was challenged repeatedly on many levels. That point is immediately evident in any serious historical study of measurement and quantification in practice. Their aggressive impersonality may not point to any inherent tendency of bureaucratic activity or scientific investigation, but rather to a flight from the subjective in the face of suspicions and challenges.

This book explores the topic of objectivity and its contradictions from a different angle, focusing on an individual rather than a set of impersonal institutions. It is, in a way, the life of a great statistician, yet the first seven of the book’s ten chapters are not mainly about statistics. I discuss in the epilogue the implications of my attention to a single person, and the standing of the individual in science. Here I emphasize some of the advantages that the more tightly focused perspective brings, apart from the immense fascination of this varied and tormented life. Its protagonist emerges as receptive and yet doctrinaire, participating in the great scientific and social movements of his time but never at ease with them. His mission, as it emerged in the early 1890s, was formed of many ingredients, including religiosity and unbelief, historical vision, “the woman’s question,” eugenic socialism, applied mathematics, and evolutionary biology. These materials were made available to him by his culture, and a crucial element of the story is how he sought to integrate them into a coherent life. He wanted science to become the basis of shared values and a unified culture, as the Church had been for medieval Europe. Yet he lived at a time when strong moves to disciplinary specialization were narrowing the public role of science. His own field of statistics, despite its universalist claims, tended more to advance than to inhibit these developments.

If an “age of science” means that scientific knowledge or training should bring access to the levers of power, then Pearson’s time was not really one of these. Although he was able through his immense determination to build a “biometric school,” he was rarely a consultant to the powerful, and his methods only slowly penetrated a civil service dominated by men
formed on very different principles from those he offered. What he advertised as a new, general method, they understood as a technical specialty, which, as such, would at best be suited to contribute to the consideration of certain narrow questions. Pearson optimistically anticipated that in the end the governors would recognize their need for his tools, and in a way this proved right, but he could not have felt himself, in his own time, supported by the crushing force of modernity. His was, in a way, a utopian project, even a hopeless quest, and quantifiers had to play a role in creating the conditions under which their methods would become influential. Such methods have never been hegemonic, except in very particular domains. A focus on a single career, and especially this one, brings the seeming colossus of quantification, and its sibling “scientific method,” into the contingent domain of history. It reveals many of the cultural components out of which these ambitions were fashioned, how they were situated in a field of competing alternatives, and how a program for science such as Pearson’s presumed also a vision of the moral character of its practitioners.

The Significance of a Life

A life such as Pearson’s would provide excellent materials for a novel, and I have tried in this book to develop some of its novelistic aspects. But these, too, can be historically situated, and they pertain to an enterprise that has made a difference. Pearson helped to create something new and important, a body of applied mathematics allied to a conception of scientific rationality as a form of personal renunciation. These intellectual and moral qualities were suited, he thought, to the vital role the scientist must assume in the coming socialist state. Obviously it was not in his power to determine the form and role of expertise in his or any other polity, but in time the field of statistics took on a key role in defining objective knowledge in administrative as well as scientific contexts. Pearson’s philosophical conception of science was particularly influential in relation to policy-oriented sciences, and provided a model, convincing to many, of the moral qualities of the scientist. Pearson’s career as a historian, feminist, and socialist, and the sense of rational selfhood he worked out through those efforts, mark an important episode in the history of the scientist as a form of life and as a professional category.

From this perspective, the central document in the Pearson corpus is his book *The Grammar of Science*, first published in 1892. It was the outcome of his physical researches on the mathematics of elasticity in relation to a bold theory that would explain the whole range of physical and chemical phenomena in terms of ether pulsations or, later, “ether squirts.” *The Grammar of Science* expressed wider ambitions as well, joining a philo-
sophical skepticism about our access to an independently existing world of things in themselves with a bold claim for the unlimited scope of science. To this was added a moral vision of scientific method as the very basis for modern citizenship, because it provides standards of knowing that are independent of all individual interests and biases. The epistemology preserved and modified the German philosophical idealism to which he had recourse when he lost his Christian faith; the moral arguments were distilled from more than a decade of his lectures and writings on socialism, religious history, and feminism; and the vision of impersonal science was among other things a solution to his intensely personal anxieties about egoism.

It was also an important book for its age. Lenin, who thought that Pearson’s explicit philosophical idealism exposed the true reactionary tendencies of the new positivism, offered backhanded praise for his philosophical consistency. Henry Adams, in one of the more memorable sections of his autobiography, declared epigrammatically that “the rise or fall of half-a-dozen empires interested the student of history less than the rise of the ‘Grammar of Science.’” He interpreted it as one mark of those scientific and technological changes to which he, a scion of New England patriarchy, had been unable to adapt. Pearson, he thought, had destroyed the order of nature, leaving a chaos of chance, and had reduced “truth” to “a medium of exchange.”7 Others were more favorable, and some saw the Grammar as the beginning of a new age, a work of revolutionary boldness. Albert Einstein in 1902 formed a little reading group in Bern, which began its study with Pearson, and there is evidence of a Karl Pearson reading group at the University of California about the same time. Radical social scientists were delighted at how Pearson joined socialism to the scientific standpoint. Many were enchanted by the prospect of quantitative objectivity. Lancelot Hogben, late in life, reminisced that his generation had “been suckled on the Grammar of Science,” receiving it as a new evangel.8

While others were becoming excited about his Grammar, Pearson was beginning to receive the gospel of statistics, first as a graphical method, and then as a program of biological measurement and quantitative analysis. In the early twentieth century, the Grammar was understood by many, including by Pearson himself, as a philosophical rationale for statistics, though in fact he took up statistics only after completing its first edition.

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Thereafter, right to the end of his life, Pearson would make it his mission to reshape science using the tools of statistical mathematics. From 1893 to about 1905 he published a series of papers that gave a new direction to the field of statistics. In 1901 he founded, in collaboration with Francis Galton and W.F.R. Weldon, the journal *Biometrika*, which was dedicated to this project. He personally wrote or put in motion the research for most of its contents, and he felt responsible to make almost every paper an adequate expression of his conception of the field. That is, he ran it with the heaviest of editorial hands, setting a standard against which modern literary questions about the meaning of “authorship” appear thin and academic. Little wonder, given his refusal to tolerate dissent on such important matters, that he was engaged in perpetual controversy. Those who would push the project further, including some of his own students, could not avoid his wrath, yet they remained practitioners of the discipline that he established. Some, such as R. A. Fisher, inherited also his missionary ambitions, which bear some responsibility for the continued fractiousness of the field of statistics, the obverse of this Pearsonian faith in the one true way.

Pearson’s third great missionary campaign, though it has appeared increasingly disreputable since the 1930s, was eugenics. In this, as in statistics, he was a proud follower of Galton, and the broad argument for the relations between his statistical and his eugenic ambitions remains convincing.\(^9\) He refused to compromise himself by joining any movements or by engaging in concrete politics. Yet he sponsored and delivered a regular program of public lectures on the urgent need for scientific study of eugenics, which should lead in time to a program of political action, a new socialist program. Pearson derived from eugenics also a sense of connectedness with the deeper purposes of life, a pantheistic wholeness recalling his early admiration for Spinoza that was hard to reconcile with the positivist’s alienation from nature.

My investigation of these topics has drawn me also into the more private domain of family tensions, religious angst and connectedness with nature, tangled relationships of friendship and love, and even sexual experiences. In his youth he imagined himself a poet, and as a young man he undertook repeatedly to reconstruct his life as a witty or tragic novel. These episodes I find fascinating in themselves, and it has not been my aim to dispatch them efficiently. All, however, are in the end incorporated into a narrative that forms an argument, one that integrates the private into the scientific life of this applied mathematician with, I believe, a richness that has rarely been possible in writing about science. A history of this sort depends on the rich hordes of documents Pearson preserved, but also on the peculiar

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\(^9\) See discussion of eugenics in chapter 9.
character of the man. Pearson universalized the life of the mind, analyzing and theorizing about what most others have seen as strictly personal matters. For him, science had no limits, and scientific method was all the more urgent in regard to what seemed most unreasonable. He came before the world as a distinctive scientific persona, but he worried without end about the implications of science for the person—one might almost say the soul. He did not reduce the relation between the self and the natural or social order to one of mirroring; but every genre in which he wrote, including mathematics, drew from and had implications for a moral sense of personhood and a vision of cultural reformation.

Pearson was in many ways poorly socialized, a thoroughly original character who, while drawing deeply and repeatedly from the cultural resources of his time, rejected many of the conventions of his class and his profession. It would be absurd to present him as typical of anything, and no straightforward generalizations can be founded on a study of this odd life. Yet there is a sense also in which his experience makes richly visible what is, if not the rule, certainly much more than the exception: interpenetrating definitions of science and scientist; complex trajectories of intimacy with and detachment from nature; a tangled relationship, no mere opposition, between understandings of the personal and claims about the universal; and the ambition to construe scientific method not merely as the discipline necessary to produce expert knowledge, but as a cognitive and moral framework for the formation of citizens and elites.

THE PERSONAL AND THE IMPERSONAL

The “impersonal” for Pearson and for other Victorian moralists was not the contradiction of personal cultivation, but its fulfillment, representing the possibility of raising oneself above selfish egoism. Not for nothing did he regard Goethe’s Wilhelm Meister as a formative work, for Pearson viewed life in the guise of a bildungsroman. Intensely self-conscious as he was, he constantly assessed himself against this standard of individual growth. The profusion of his own research interests, while allowing the development of all his capacities, threatened also a fracturing or dissolution of the integral self. The consummate meritocrat, he worried throughout the 1880s that he had squandered his talents by dabbling. Yet he did not want to be trapped in professional deformation, the narrowing and distortion of self that advocates of “culture” identified with research science. Statistics was the answer to his quest for a life mission, a field defined by methodology and mathematics that licensed him to make incursions into every man’s specialty.

Science was also, for him, the legitimate object of passion, a release from sectarianism. He praised the virtues of impartiality first of all in his researches
on Reformation Germany, a topic about which nobody in Christian Europe could write impartially. The scientific attitude took on a deeper meaning in the group he set up in 1885, the “Men and Women’s Club,” where impersonality was cherished particularly by women for the access it gave them to the intellectual world of men. The novelist and club member Olive Schreiner, echoing Pearson’s admiration for Spinoza, celebrated his devotion to “intellectual love,” even if she sometimes wrote with biting irony of his icy detachment. Her ambivalence reflected some contingent circumstances, for impersonality is naturally less appealing in a person with whom one has fallen in love. Since the club gave rise to a thicket of passionate attachments, among them Pearson’s for the club secretary, Maria Sharpe, dispassionate inquiry became all the more necessary to preserve the ideal of friendship “from man to man.”

An intense dialogue about surface and depth runs through much of Pearson’s work. As a young man, he recorded several ecstatic encounters with nature, which he regarded as among the most powerful moments of his life. These were notably unscientific experiences, and his subsequent identification of knowledge with numbers and cool precision was a real act of renunciation for him. In *The Grammar of Science*, he made rationality stand for distance from objects of desire, knowledge being only of sensations or appearances. This could scarcely have been satisfying to a man who repeatedly condemned “sham” and disguise, and whose habit of self-revelation reflected a need to feel understood. To be sure, there was always an element of metaphysical idealism—implying a different and deeper reality—in his denial that we can make contact with the material world. This dimension, however, became less and less prominent as he placed increasing emphasis on the instrumental efficiency of measurement and calculation in a world of endless Darwinian struggle. Whether from resignation or heroic self-denial, he sacrificed much of the satisfaction of intimate connection with nature for the sake of detached, impersonal, quantitative formulations.

Science also meant the control of individualistic egoism. As a historian, he expressed this moral viewpoint with his strong preference for “Catholic socialism” over the reign of exploitative self-interest brought by Martin Luther. Protestantism he saw as the progenitor of the capitalistic economic system against which he struggled in his own time, and which he thought was destined soon to pass away. He held up scientific method as the only proper basis for true, socialist citizenship, since it provided standards of knowledge and belief that were binding on everyone. As ever, Pearson’s public campaign was also a personal one. As he explained to Maria Sharpe in 1889 during the first phase of their traumatic engagement, he feared his inherited tendency to selfish egoism. Woman, as mother, stood for the possibility of selfless love, yet by sacrificing themselves, women also en-
couraged the excesses of male egoism that were depicted so disturbingly in the literature of Henrik Ibsen and George Meredith, as well as in the sad domestic scenes of Pearson’s childhood. The emancipation of women, essential for the ideal of self-development that he applied evenhandedly to boys and girls, was required also for the morality of the new man. Pearson’s emphatic identification of science and impersonality was thus but one element in an enduring campaign to subordinate the self, especially his own, to higher ends.

Pearson was anything but the passive recipient of influences. He was a distinctly headstrong socialist, increasingly unwilling to participate in anything he did not find. He even withdrew to a large degree from the community of science, skipping most meetings of the British Association for the Advancement of Science, and (after 1900) publishing mainly in his own journals and pamphlet series. Yet he consistently emphasized, often with particular reference to himself, the ways that every person is the product of their age. His obsession with personal development, far from implying isolation from his culture, demanded that he seek out the best teachings he could find on religion, philosophy, history, politics, and science. His responsiveness to literature, in particular, reveals to what extent his scientific sensibility was rooted in a time and place. I do not define that rootedness in terms of effects on Pearson and then of his contributions to knowledge, but of the formation of an individual in perpetual engagement with his world. The person here is never isolated or independent, but neither does he disappear. Pearson was one of the first to talk of a dissolution of the subject, but his career of self-cultivation meant a tireless endeavor to find meaning and purpose in the world. Although some of those meanings now seem repugnant to me, and probably to most potential readers, I have tried to write in a way that takes them seriously.

In his biography of Galton, Pearson proposed a statistical solution to the problem of identity. “It would be an interesting problem to determine what is the degree of likeness of a man to himself, by correlating the habits and modes of thought of individuals at selected ages. We might thus obtain a measure of the permanence of individuality.” He added that Galton displayed a “marvelous sameness” over the decades. Marvelous it must have been, for Galton’s mode of life and research interests changed utterly between the ages Pearson mentioned, twenty and sixty. Pearson’s own life was no less wide-ranging, and he would no doubt have appreciated a statistical proof of its fundamental coherence. Neither reducing a life to an equation nor parceling it out among various scientific, intellectual, and personal ambitions was tolerable to him. For all his dedication to objectivity, he insisted on the role of individuality in science, the search for truth as the expression

of intellectual love. Yet in an age of teeming specialization, of reason reduced to calculation, science seemed less and less hospitable to the creative individual, restlessly seeking truth. Pearson’s life, the story of an aggressive, angular, and deeply self-conscious scientist, is also an account of the changing possibilities of the scientific self in an age that has inclined to confine it and to isolate it from other aspects of this sometimes passionate process we call living, by making it selfless and objective.