

# The Logician in the Archive:

## John Venn's Diagrams and Victorian Historical Thinking

### Introduction

In an early-twentieth-century sketch titled “A College Biographer’s Nightmare (As Described after Dinner),” the probability theorist, logician, and historian John Venn (1834–1923) related “a sort of Vision of Judgment” set in a space resembling the halls of his Cambridge college Gonville & Caius “but enlarged beyond all recognition” and “filled from end to end with a vast crowd.” The men gathered there, Venn reported, “evidently came from many, and some from remote districts of the country; and by their dress and deportment seemed to extend from very early times down to our own day.” He catalogued robes and other trappings of the varied social stations represented in the crowd: bishops with “mitres on their shaven heads,” lower clergy “in cassock, wig and bands,” and “many a gay and gallant gentleman, some with the velvet cloak, ruff and rapier.” Soon Venn perceived among them a “universal hum of deep dissatisfaction” aimed at someone who “had scandalously misdescribed their careers in life.” The men decried misstated ranks and achievements, even premature dates of death. Suddenly they located their culprit, and the tale ended with Venn’s terrified moment of recognition: “Then the truth flashed on my mind. They were the men whose lives I had written, and I awoke with a scream.”<sup>1</sup>

While surely neither the first nor last historian to fear the sin of “scandalous misdescription,” Venn experienced an epistemic anxiety shaped by a specific constellation of mathematical probability, formal logic, and Victorian historiography. The component parts of

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<sup>1</sup> John Venn, *Early Collegiate Life* (Cambridge: W. Heffer and Sons Ltd., 1913), 1–4.

Venn's intellectual world are all objects of large literatures, but the coherence that gave them meaning together in his projects remains obscured from a perspective focused on any individual element. Historiographic interest in Venn has primarily concerned his philosophy of probability, in particular his articulation of a position known as the frequency interpretation (a label popularized by John Maynard Keynes; "frequentism" is an interchangeable variant).<sup>2</sup> The frequency interpretation holds that probability describes proportions of outcomes among specific series of events rather than an observer's quantified confidence that a given event did or will occur (the so-called degree-of-belief interpretation). Venn's name is familiar to a far wider audience through his eponymous logic diagrams (figure 1).<sup>3</sup> In the later decades of a respectable career teaching and writing about logic and probability, Venn increasingly dedicated himself to antiquarian studies of his college, his university, and his family. Though Venn's diligent work as a collegiate historian is not unknown, scholars of Victorian historiography have so far paid him

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<sup>2</sup> John Maynard Keynes, *A Treatise on Probability* (London: Macmillan and Co., 1921), 92–110. The *OED* traces the related coinage "frequentist" to M. G. Kendall, "On the Reconciliation of Theories of Probability," *Biometrika* 36, no. 1/2 (1949): 101–16, at 104. On Venn's place in the philosophy of probability, see Theodore M. Porter, *The Rise of Statistical Thinking 1820–1900* (Princeton: Princeton University Press, 1986), 87; Ian Hacking, *The Taming of Chance* (Cambridge: Cambridge University Press, 1990), 126–27; Lukas M. Verburgt, "Remarks on the Idealist and Empiricist Interpretation of Frequentism: Robert Leslie Ellis versus John Venn," *BSHM Bulletin: Journal of the British Society for the History of Mathematics* 29, no. 3 (2014): 184–95.

<sup>3</sup> An important early presentation of Venn's diagrammatic method in a pedagogical context is C. I. Lewis, *A Survey of Symbolic Logic* (Berkeley: University of California Press, 1918), 175–84. On the longer history of diagrams in formal logic, see Margaret E. Baron, "A Note on the Historical Development of Logic Diagrams: Leibniz, Euler and Venn," *The Mathematical Gazette* 53, no. 384 (1969): 113–25; Martin Gardner, *Logic Machines and Diagrams*, 2nd ed. (Chicago: University of Chicago Press, 1982), 28–59; Amirouche Moktefi and Sun-Joo Shin, "A history of logic diagrams," in Dov M. Gabbay, Francis Jeffry Pelletier, and John Woods, eds., *Handbook of the History of Logic*, 11 vols. (Amsterdam: North-Holland, 2004–2012), 11:611–82. On Venn diagrams as geometrical figures, see A. W. F. Edwards, *Cogwheels of the Mind: The Story of Venn Diagrams* (Baltimore: Johns Hopkins University Press, 2004).

little attention.<sup>4</sup> Historians who have considered the arc of Venn's career have tended to assume his turn from logic to history was a rupture between two separate intellectual lives.<sup>5</sup>

I will argue instead that a deep continuity joined Venn's logical and historical projects, and that the unappreciated coherence of his intellectual output reveals larger convergent currents in Victorian intellectual life. By invoking the notion of coherence I do not suggest Venn's thought was utterly free from inconsistencies; rather I call attention to the harmony between his several projects and their attendant anxieties, the way Venn confronted disparate questions equipped with a characteristic set of interests and commitments.<sup>6</sup> In his attitudes and pedigree, Venn was representative of the coterie of bookish Victorian elites that Noel Annan influentially dubbed an "intellectual aristocracy," an intermarrying intelligentsia notable for its allegiance to stability and gradual improvement.<sup>7</sup> Victorian historical thinking has been broadly characterized by its preoccupation with evolutionary notions of progress, typically understood in opposition to the statistical thinking found in the sensational but widely criticized determinist histories of Henry Thomas Buckle (1821–1862).<sup>8</sup> Venn too held a low opinion of Buckle, but across his

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<sup>4</sup> For a classic account of Victorian historiography, see J. W. Burrow, *A Liberal Descent: Victorian Historians and the English Past* (Cambridge: Cambridge University Press, 1981). For a recent survey of historicism's mark in disparate areas of Victorian life, see Mark Bevir, ed., *Historicism and the Human Sciences in Victorian Britain* (Cambridge: Cambridge University Press, 2017). On collective biography and prosopography, see Lawrence Stone, "Prosopography," *Daedalus* 100, no. 1 (1971): 46–79.

<sup>5</sup> Byron Emerson Wall, "John Venn, James Ward, and the Chair of Mental Philosophy and Logic at the University of Cambridge," *Journal of the History of Ideas* 68, no. 1 (2007): 131–55; William Kenneth Stockton, "The Venn Family since the Mid-Eighteenth Century," Ph.D. dissertation, Brandeis University (Comparative History), 1979, chapter 12.

<sup>6</sup> Studies that have productively foregrounded similar instances of coherence in disparate contexts include the treatments of the Exner family's liberalism in Deborah R. Coen, *Vienna in the Age of Uncertainty: Science, Liberalism, and Private Life* (Chicago: University of Chicago Press, 2007) and Dmitri Mendeleev's conservatism in Michael D. Gordin, *A Well-Ordered Thing: Dmitrii Mendeleev and the Shadow of the Periodic Table* (New York: Basic Books, 2004).

<sup>7</sup> Noel Annan, "The Intellectual Aristocracy," in J.H. Plumb, ed., *Studies in Social History* (London: Longmans, 1955), 241–87, Venn on genealogical tree at 276. For alternate interpretations of this formation, see T.W. Heyck, *The Transformation of Intellectual Life in Victorian England* (London: Croon Helm, 1982); William Whyte, "The Intellectual Aristocracy Revisited," *Journal of Victorian Culture* 10, no. 1 (2005): 15–45.

<sup>8</sup> For a classic study of Victorian evolutionary thinking, see J. W. Burrow, *Evolution and Society: A Study in Victorian Social Theory*, (Cambridge: At the University Press, 1966). See also Marco de Waard, "History's

writings he made visible an equally statistical logic that underlay much Victorian historical thinking, especially as expressed in collective biography. In all his writing, Venn practiced an epistemic orientation fundamentally structured around the relationships between individuals and the collectives—or “series,” to use Venn’s term—to which they belong. If Venn was unusual in actually publishing on the topics of probability, logic, and historiography alike, the fact that his contributions in each arena struck contemporary readers as valuable and never particularly idiosyncratic indicates that his outlook resonated with common Victorian attitudes. Ultimately the Venn diagram and the collective biography reinforced the same picture of the past as something to be known through collections of aptly chosen individuals.

I begin by introducing the work on probability that first earned Venn a reputation, highlighting the relationship between his frequentist philosophy and the amalgam of disciplines and concerns then known as the moral sciences. Next I consider the iconic overlapping circles Venn referred to as his “diagrammatic device,” analyzing them on their own terms and showing how they reflected the same epistemic commitments as the growing antiquarian interests that soon eclipsed logic among Venn’s intellectual priorities. Finally I explore Venn’s historical work in greater depth, situating it with respect to Leslie Stephen’s monumental *Dictionary of National Biography*, and arguing that Venn’s work, taken as a whole, articulates the assumptions implicit in Victorian collective biography. The twin problems of historical knowledge, for Venn, were to locate the long-dead individuals who constituted particular elite series, and to know those series themselves through their distantly discernible members. The coherence of Venn’s work across probability, logic, and historiography illuminates a conceptual framework underlying the great regard for elite individuals in Victorian historical thought more generally. To view his writings

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(Un)Reason: Victorian Intellectualism from J. S. Mill to Leslie Stephen,” *Victorian Studies* 53, no. 3 (2011): 457–67; Brian Young, “History,” in Bevir, *Historicism and the Human Sciences in Victorian Britain*, 154–85.

as a whole is to recast the famous Venn diagram as a visualized theory of the individual and the collective—a Victorian theory of historical knowledge.

### **Toward a Moral Frequentism**

Venn made a name for himself criticizing trends in the theory of probability and articulating the interpretation of it now labeled frequentism; already in this early work, he cast probability as a deeply historical way of thinking. Probability was closely affiliated with formal logic in mid-nineteenth-century British scientific discourse, and both areas of inquiry fell within the ambit of the recently established Cambridge Moral Sciences Tripos, the context for most of Venn's teaching at Gonville & Caius. Lacking an explicit definition, the Moral Sciences Tripos of the 1850s simply covered what philosopher Henry Sidgwick described in 1876 as “a combination ... of certain subjects in which the university happened to possess professors.”<sup>9</sup> In 1860 the Moral Sciences Tripos became a route to a degree in its own right and its content began to cohere around the topics of moral and political philosophy, mental philosophy, logic, and political economy.<sup>10</sup> Employing the word “moral” in a sense evidently wider than today's with its specifically ethical connotations, the moral sciences constituted a wide study of human thought

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<sup>9</sup> Henry Sidgwick, “Philosophy at Cambridge,” *Mind* 1 (1876): 235–45, at 242. For the association of probability with logic, see e.g. John Stuart Mill, *System of Logic, Ratiocinative and Inductive* (London: John W. Parker, 1843), 2: book III, chapter 18; Augustus De Morgan, *Formal Logic: Or, the Calculus of Inference, Necessary and Probable* (London: Taylor and Walton, 1847); George Boole, *An Investigation of the Laws of Thought, on Which Are Founded the Mathematical Theories of Logic and Probabilities* (London: Walter and Maberly, 1854).

<sup>10</sup> Sidgwick, “Philosophy at Cambridge,” 243. See also James Ward, *The Moral Sciences Tripos*, revised ed. (Cambridge: Deighton, Bell and Co., 1891); John R. Gibbins, “Constructing Knowledge in Mid-Victorian Cambridge: The Moral Sciences Tripos 1850–70,” in *Teaching and Learning in Nineteenth-Century Cambridge*, eds. Jonathan Smith and Christopher Stray (Woodbridge: The Boydell Press, 2001), 61–88.

and action. Any adequate understanding of Venn's frequentism must foreground its immersion in the context of the profoundly human-oriented moral sciences.

As an undergraduate, Venn apparently had little contact with the Moral Sciences Tripos, instead completing the famously grueling Mathematical Tripos in 1857. He achieved the impressive result of sixth Wrangler but the punishing experience drained his interest in mathematics. Coming from a long line of Evangelical clergymen, he seems to have regarded a clerical career as a foregone conclusion, and took Holy Orders upon graduation. After several years serving as a curate, however, a growing sense of tension between his personal beliefs and Anglican doctrine impelled him to give up his post and return to the university in 1862. For over half a century he would hold various positions at Gonville & Caius. Though he never obtained a professorship at Cambridge (or elsewhere), he was elected Fellow of the Royal Society in 1883 and over the years he carved out a role for himself as the keeper of institutional memory at his college.<sup>11</sup> When Venn returned to Cambridge at the start of the 1862 Michaelmas term, he took up teaching logic to Moral Sciences students whom he described as sharing an enthusiasm for ethics, a lack of mathematical training, and a desire to take holy orders.<sup>12</sup> Immersed in moral-scientific studies, Venn soon began work on the book that would make his reputation, *The Logic of Chance*, which appeared in 1866.

Several themes animated *The Logic of Chance*: the possibility of free will, the meaning of chance, and the relationship between the individual and the aggregate. Venn's approach to probability revolved around the concept of the "series," a "class of objects as to the individuals

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<sup>11</sup> Most biographical information follows Venn's unpublished memoir, "Annals: Autobiographical Sketch" (hereafter "Autobiographical Sketch"), in the Venn Papers, CMS/ACC81, Special Collections, University of Birmingham (hereafter Birmingham Venn Papers). On the Mathematical Tripos, see Andrew Warwick, *Masters of Theory: Cambridge and the Rise of Mathematical Physics* (Chicago and London: Chicago University Press, 2003).

<sup>12</sup> Venn, "Autobiographical Sketch," 122–27.

of which we feel quite in uncertainty, whilst as we embrace larger numbers in our assertions we attach greater weight to our inferences.”<sup>13</sup> Probability concerned aggregate series about which one could arrive at knowledge that was unattainable with respect to individuals. Such series represented strategic approaches to knowledge production, not realities to be discovered: “The objects, be it remembered, are given to us in nature; the order under which we view them is our own private arrangement.”<sup>14</sup> Individuals had real existence in nature while aggregates did not, yet aggregates alone were subject to probabilistic inquiry. Venn’s interpretation reduced probabilities to historical records of an idealized series of individuals, but left open the problem of defining such a series, for he did not believe it admitted of a general solution. The book found a receptive audience, going to three editions by 1888. American logician and philosopher Charles Sanders Peirce declared it “a book which should be read by every thinking man.”<sup>15</sup> Over a half a century later, even while rejecting the frequency interpretation, economist John Maynard Keynes sent Venn a copy of his *Treatise on Probability* “in a spirit of piety to the father of this subject in Cambridge,” remarking that no “systematic Treatise on the *Logic* of the subject” had appeared in English in the intervening decades; Venn’s statement had remained authoritative.<sup>16</sup> For decades, his frequentist understanding of probability had seemed to many readers to amount to common sense.

As is well established in the literature, historical questions lurked behind Venn’s frequentism from the beginning. In unpublished memoirs he acknowledged “an immense debt” to the English autodidact historian Henry Thomas Buckle, who briefly took the Victorian reading

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<sup>13</sup> John Venn, *The Logic of Chance* (London: Macmillan and Co., 1866), 3–4.

<sup>14</sup> Venn, *Logic of Chance*, 8.

<sup>15</sup> C. S. Peirce, “Venn’s *Logic of Chance*,” *North American Review* 105, no. 216 (1867): 317–21, at 317.

<sup>16</sup> John Maynard Keynes to John Venn, 31 August 1921, Venn Papers, Gonville and Caius College Archives, Cambridge (hereafter Caius Venn Papers), C49; emphasis in the original.

public by storm with his *History of Civilization in England*, published from 1857 to 1861.<sup>17</sup>

Buckle aimed to found a scientific study of history by drawing on the science of statistics as recently elaborated by the Belgian astronomer Adolphe Quetelet (1796–1874), who articulated a popular concept of the average man (*l'homme moyen*) describing the ideal type of a given population, especially a nation.<sup>18</sup> Taking Quetelet's famous discussion of stable annual suicide rates as exemplary, Buckle argued that "the power of the larger law is so irresistible, that neither the love of life nor the fear of another world can avail anything towards even checking its operation."<sup>19</sup> This morbid constraint on free will troubled the young Venn. "The root idea of my *Logic of Chance*," he recollected, "was taken in as I read ... the often quoted statement of Buckle about the impossibility of checking the statistical regularity of human actions. The passage puzzled me at the time, and soon began to raise many doubts and much vague suspicion."<sup>20</sup> Thus was Venn launched on a critical quest to unravel dubious claims; he deemed Buckle "undoubtedly the author who first gave me an impulse in the direction in which my later studies have lain, and which, but for him, they might never have assumed."<sup>21</sup> Striving to clarify the historical relationship between free individuals and the pattern-bound series to which they belonged, Venn sought to allay fears of determinism.<sup>22</sup>

Historians of probability have celebrated *Logic of Chance* as a foundational expression of the frequency interpretation and documented the extent to which that expression was conditioned

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<sup>17</sup> Venn, "Autobiographical Sketch," 89. In what follows, I draw especially on Porter, *Rise of Statistical Thinking*, chapters 4 and 6 and Hacking, *Taming of Chance*, chapters 13–15.

<sup>18</sup> His first major publication was the two-volume *Sur l'homme et le développement de ses facultés, ou essai de physique sociale* (Paris: Bachelier, 1835), which collected a number of earlier writings.

<sup>19</sup> Henry Thomas Buckle, *History of Civilization in England*, new edition, 3 vols. (London: Longmans, Green, and Co., 1878), 1:28.

<sup>20</sup> Venn, "Autobiographical Sketch," 130.

<sup>21</sup> Venn, "Autobiographical Sketch," 89.

<sup>22</sup> For a skeptical account of Venn's efforts to rebut determinism, see Byron E. Wall, "Causation, Randomness, and Pseudo-Randomness in John Venn's *Logic of Chance*," *History and Philosophy of Logic* 26, no. 4 (November 1, 2005): 299–319.

by Venn's broader context; by referring to his outlook as moral frequentism, I aim to underscore the inseparability of Venn's interpretation from its context. Byron Wall has asked why Venn was "so upset by the degree-of-belief interpretation" against which frequentism rebelled "that he would write a long, detailed treatise to show that it was untenable and that actual or potential frequency of occurrence is the only intelligible meaning of probability," and concluded that frequentism allowed Venn to "retain his personal belief in the doctrines of Christianity and the miracles that form their core, while nevertheless approaching questions of chance and aggregate predictability from the point of view of a 'man of science.'"<sup>23</sup> Framed thus, Venn's interest in the epistemic problems of faith is cast as something properly external to his scientific work yet exerting (undue) influence on it. Berna Kılıç has offered a more integrated account of Venn's commitments, convincingly stressing the importance of historicist and especially evolutionary thinking in Venn's perception of a puzzle now known as the reference class problem: if a probability is a frequency of occurrence among a chosen series of individuals, how do we select the most relevant series of individuals to consider? Realizing in the wake of Darwin's *Origin of Species* (1859) that even living species were not permanently fixed types, Venn concluded that the series underlying probability calculations could never be taken as given in nature.<sup>24</sup> By emphasizing Venn's acceptance of Darwinism, Kılıç highlights a case of theoretical impossibility. The Darwinian belief that even species were historically mutable phenomena suggested the more general theoretical problem that fixed series might not exist in nature.

That abstract problem, however, would trouble later theorists of mathematical probability more than it did Venn. Kılıç concludes, "Not being able to provide a general rule about the

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<sup>23</sup> Byron E. Wall, "John Venn's Opposition to Probability as Degree of Belief," *Studies in History and Philosophy of Science Part A* 37, no. 4 (December 2006): 550–61, at 551 and 559.

<sup>24</sup> Berna Eden Kılıç, "John Venn's Evolutionary Logic of Chance," *Studies in History and Philosophy of Science Part A* 30, no. 4 (1999): 559–85, especially 569–72.

determination of the reference class, Venn left the decision about which statistical frequencies to employ to a large extent open. ... This question, the reference class problem, has ever since been a difficulty in the foundations of frequentism.”<sup>25</sup> The difficulty remained for any attempt to give frequentism abstract foundations, but there is no indication Venn himself was particularly troubled by this concern of later frequentists. For Venn the moral scientist, recognizing the limits of probabilistic methods marked an achievement in the study of logic and validated, within constraints, a tool for the study of society. Contingency of reference classes notwithstanding, in practice Venn was no pessimist regarding the prospects of identifying and studying useful series. Not seeking a single correct reference class for any particular question, he would eventually find a concrete series he considered eminently (but not uniquely) fit for productive study. The historical studies of his college that would occupy Venn’s later career exemplified a situation in which the artificial series was indeed far more knowable than its particular individuals.

### **From a Diagrammatic Device to the “More Pleasant Work” of History**

Before turning to historical particulars, Venn further explored the abstract problems of series formation in the realm of formal logic, a pillar of his Moral Sciences teaching load; this work soon resulted in the familiar Venn diagram. Formal logic encompassed several strands of discourse in Victorian Britain. Since the early nineteenth century, renewed interest in traditional logic, rooted in Aristotle and his Scholastic interpreters, had led to a revitalized deployment of logic textbooks in British university education. In 1843, John Stuart Mill articulated a thoroughly

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<sup>25</sup> Kılıç, “John Venn’s Evolutionary Logic of Chance,” 582. For a classic statement of the reference problem [*das Problem der Bezugsklasse*], see Hahns Reichenbach, *Wahrscheinlichkeitslehre: Eine Untersuchung über die logischen und mathematischen Grundlagen der Wahrscheinlichkeitsrechnung*, vol. 7 in Hahns Reichenbach, *Gesammelte Werke*, eds. Andreas Kamlah and Maria Reichenbach (Wiesbaden: Vieweg, 1994), 382.

empiricist perspective that privileged inductive over deductive reasoning.<sup>26</sup> Around midcentury, influenced by this rebirth of formal logic, the autodidact mathematician George Boole had introduced a method of inscribing and solving logic problems using algebraic notation.<sup>27</sup> Boole and his peers launched a sustained though disunified project reconceptualizing logic and mathematics in one another's image. This algebraic tradition diverged fairly quickly from the traditional camp, who continued to dominate university examinations for decades but garnered little interest beyond educational requirements. Mill's and Boole's logics both shaped Venn's views enormously. He considered himself influenced most by Mill, yet largely followed Boole in embracing symbolic methods. His general orientation can be summarized, following Lukas Verburgt, as an effort to chart a middle course between Mill's thoroughgoing empiricism and Boole's privileging of the mind's deductive and conceptual processes.<sup>28</sup>

In an 1880 paper for the recently established psychological and philosophical journal *Mind*, Venn argued that logicians had lately been divided into three camps based on an unacknowledged disagreement as to how exactly propositions worked. What was the precise significance of asserting that some or all X were Y? Venn outlined three basic notions of the proposition: "the ordinary or *predication* view, the *class inclusion and exclusion* view, and that which may be called the compartmental view."<sup>29</sup> In the predication view (underpinning traditional logic), the grammatical distinction between subject and predicate in a statement like

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<sup>26</sup> Richard Whately, *Elements of Logic*, second ed., (London: J. Mawman, 1827) is credited with initiating the revival of interest in traditional logic; Mill, *System of Logic* is the central text in the inductive tradition.

<sup>27</sup> George Boole, *The Mathematical Analysis of Logic, Being an Essay towards a Calculus of Deductive Reasoning* (Cambridge: Macmillan, Barclay, & Macmillan, 1847); Boole, *Laws of Thought*.

<sup>28</sup> Lukas M. Verburgt, "'A Terrible Piece of Bad Metaphysics'?: Towards a History of Abstraction in Nineteenth- and Early Twentieth-Century Probability Theory, Mathematics and Logic," Ph.D. dissertation (University of Amsterdam, 2015), chapter 7. Venn described his rapturous youthful reading of both authors in "Autobiographical Sketch," 95–98.

<sup>29</sup> John Venn, "On the Forms of Logical Proposition," *Mind* 5, no. 19 (1880): 336–49, at 336. On the novelty and significance of *Mind* in Victorian discourse, see Thomas W. Staley, "The Journal *Mind* in Its Early Years, 1876–1920: An Introduction," *Journal of the History of Ideas* 70, no. 2 (2009): 259–63.

“All X is Y” corresponded to a meaningful logical difference between the roles of the two terms. In the class inclusion and exclusion view, X and Y functioned more symmetrically, naming two classes of individuals; a proposition asserted some relation between the two classes. The third, compartmental view—which Venn considered the most powerful—adopted this latter understanding of terms as naming classes of individuals, but it rejected the primacy of binary relationships between two classes. “What we here have to do,” Venn concluded, “is to conceive, and invent a notation for, all the possible combinations which any number of class terms can yield; and then find some mode of symbolic expression which shall indicate which of these various compartments are empty or occupied, by the implications involved in the given propositions.”<sup>30</sup> Later that year he proposed just such a mode of symbolic expression.

Venn introduced his famous overlapping circles as a graphic device for actively solving logic problems. Contrary to popular usage of the phrase “Venn diagram” to describe *any* representation of interrelated categories using overlapping circles, Venn explicitly defined his diagrams in opposition to such methods (which in any case were not new and are properly known as Euler diagrams; see figure 2).<sup>31</sup> Venn stipulated instead that a diagram should always include every possible combination of inclusion and exclusion, as in figure 1. This way every theoretically conceivable compartment was visible on the page; the logician’s task was then to scratch out those combinations that were denied by the propositions in question. Through this practice a diagram user could determine and visualize which combinations of terms were ruled

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<sup>30</sup> Venn, “Forms of Logical Proposition,” 345.

<sup>31</sup> John Venn, “On the Diagrammatic and Mechanical Representation of Propositions and Reasonings,” *Philosophical Magazine* Series 5, 10, no. 59 (1880): 1–18. Swiss mathematician Leonhard Euler (1707–83) popularized this style of diagram in *Letters of Euler to a German Princess*, trans. Henry Hunter (London, 1795), 1: letter CII, 14 February 1761. See also Deborah Bennett, “Origins of the Venn Diagram,” in Maria Zack and Elaine Landry, eds., *Research in History and Philosophy of Mathematics* (Cham: Birkhäuser, 2015), 105–19.

out by a set of propositions, and hence which intersections of series actually described some individuals (figure 3).

As a straightforward depiction of series as they overlapped in all possible combinations, awaiting the scratching out of impossible combinations, the diagram was implicitly an argument that the problems of logic—much like those of probability—reduce to asserting the occurrence and non-occurrence of specific intersections of series, i.e. identifying the meaningful groupings of individuals under consideration. Faced with a symmetrically subdivided diagram, logic's task was to determine which compartments were occupied and which not.<sup>32</sup> Series were constructed privately by human investigators, but they were constrained by the facts of historical individuals. Sometimes, as in figure 3, it would emerge upon investigation that a theoretically posited series did not actually contain any members. Not every conceivable series would exist; some intersections would need to be scratched out. Others, their individual members at least partially (if laboriously) knowable, would remain to be studied.

Indeed studying concrete but laboriously knowable individuals eventually eclipsed theorizing in Venn's intellectual life. Not long after he introduced his diagrams, his enthusiasm for formal logic began to wane. Already in an 1883 letter to a friend he mocked the tedium of his subject:

Logic, as you may know, is a hobby of mine, but I frankly admit that no healthy mind unless carefully & artificially warped can take any interest in such a subject. Of actual downright palpable nonsense I don't think that it has contributed nearly as much as other subjects, e.g. Law & Theology; but it has done what it could to redress the balance in the

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<sup>32</sup> On the question of whether Venn marked affirmative as well as negative statements, see Amirouche Moktefi and Ahti-Veikko Pietarinen, "On the diagrammatic representation of existential statements with Venn diagrams," *Journal of Logic, Language and Information* 24, no. 4 (2015): 361–74.

way of masses of unspeakable dreariness in times past. I have a big book case full of it, & the very dog drops asleep if he once sits down near it;—(in the centre of the case are two books of my own on the subject).<sup>33</sup>

Logic, Venn admitted with self-deprecating humor, was boring. That said, he was far from giving it up entirely. Six years later he published his 600-page *Principles of Empirical or Inductive Logic*, and as late as 1897 he stood (unsuccessfully) for a newly founded Chair of Mental Philosophy and Logic at Cambridge.<sup>34</sup> But during these same years Venn was awakening to a new interest in history, especially the history of the college that had for so long been his intellectual home (indeed, for a time, his literal home). He became a prolific college historian, at first collaborating with his wife, Susanna Carnegie Venn (1843–1931; known as Susie), then moving on to single-author projects. Eventually he undertook with their son John Archibald Venn (1883–1958) the massive project of a biographical register of all members of the entire University of Cambridge, of which the first two volumes appeared during the elder Venn's lifetime.<sup>35</sup> He also published a history of his own prominent clan of Evangelicals.<sup>36</sup> In the decade after writing the above letter, he came to consider his logical work an obligation that held him back from pursuing historical interests. Hence in 1893 when Macmillan moved to print a second edition of his 1881 *Symbolic Logic* on a financial scheme so favorable that Venn felt compelled

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<sup>33</sup> John Venn to H. J. Hunter, 4 February 1883, Birmingham Venn Papers, C42/7.

<sup>34</sup> Wall, "John Venn, James Ward, and the Chair of Mental Philosophy and Logic at the University of Cambridge."

<sup>35</sup> John Venn and J. A. Venn, *Alumni Cantabrigienses: A Biographical List of All Known Students, Graduates and Holders of Office at the University of Cambridge, from the Earliest Times to 1900* (Cambridge: Cambridge University Press, 1922–1954), part I, vols. 1–2. The university's alumni database still commemorates their work in its domain, [venn.lib.cam.ac.uk](http://venn.lib.cam.ac.uk).

<sup>36</sup> John Venn, *Annals of a Clerical Family: Being Some Account of the Family and Descendants of William Venn, Vicar of Otterton, Devon, 1600–1621* (London: Macmillan and Co., 1904).

to agree, he found himself “shunted back into Logic, after the more pleasant work of college-history investigation.”<sup>37</sup>

Venn’s historical project certainly entailed a change of interests, but it occurred gradually, and in terms of method and demeanor it was in fact deeply continuous with his work on logic and probability. Verburgt has recently made the important point that rather than interpreting Venn’s philosophy of probability in isolation, historians can best understand it by “situating [it] within the entirety of his oeuvre.”<sup>38</sup> He goes on to contextualize the *Logic of Chance* with respect to Venn’s other writings on logic, helpfully emphasizing the continuity between these projects, and stressing in particular the Mill-inspired *Principles of Inductive or Empirical Logic*. Verburgt stops short, however, of considering Venn’s antiquarian research serious intellectual work, and elsewhere suggests that by turning to history, an aging Venn “resolutely turned away from his own field of study.”<sup>39</sup> And yet, measured by the number of published pages (surely a metric congenial to our frequentist), antiquarian studies easily constitute the majority of Venn’s actual oeuvre. As we have already seen, historical concerns arising from Buckle’s determinism had led Venn to probability theory in the first place, when he found that the mutability of series could support an argument for individual freedom. Though he did not continue to discuss free will explicitly in his later historical work, all his historical research would be structured around biographical details arranged in large collective series. In history as in probability and logic, Venn was eager to understand the place of the individual in the aggregate.

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<sup>37</sup> John Venn to H. J. Hunter, 29 October 1893, Birmingham Venn Papers, C42/28.

<sup>38</sup> Lukas M. Verburgt, “John Venn’s Hypothetical Infinite Frequentism and Logic,” *History and Philosophy of Logic* 35, no. 3 (2014): 248–71, at 248.

<sup>39</sup> Verburgt, “A Terrible Piece of Bad Metaphysics?” 192.

### Overlapping Circles: “The Past History of Whatever Corporation”

Historical research involved applying the abstract philosophy Venn had developed to the actual series of human beings he took to constitute his world—the classes of individuals whose collective histories he deemed worthy of study. Though he did not explicitly use the language of “series” in this context, he foregrounded aggregates of individuals and argued for their statistical significance. He thus made visible a statistical logic of history implicit in the wider Victorian historiographical culture in which he participated. In particular, Venn theorized the genre of biographical history—which had recently entered a period of ascendance with the ongoing publication of the *Dictionary of National Biography*—showing the project of collective biography to be rooted in a convergence of probability, logic, and historicism.

John Venn began his archival forays in the context of modest antiquarianism, working with Susie to collect and organize the college’s oldest extant admission records. They published their compilation, *Admissions to Gonville and Caius College*, in 1887. The first entry is typical: “Paman, Clement; scholar; of Chevington, Suffolk; son of Robert Paman, mediocris fortunæ, deceased. Age 18. School, Bury St Edmunds. Admitted March 1, 1559/60. Tutor and surety Mr Henry Dethic, M.A. Assigned a cubicle above the well.”<sup>40</sup> The details of John and Susie’s working process and division of labor are sparse (as are details of their relationship generally), though decades later Susie’s obituary in the *Times* would note that she “eagerly collaborated with her husband in his study of the College archives.”<sup>41</sup> It is unclear why she did not remain a named co-author as John embarked on ever more ambitious historical projects. She may have ceased

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<sup>40</sup> J. Venn and S. C. Venn, eds. *Admissions to Gonville and Caius College in the University of Cambridge, March 1558–9 to Jan. 1678–9* (London: C. J. Clay and Sons, 1887), 1.

<sup>41</sup> “Mrs. Venn,” *The Times*, 27 March 1931, 16. For an attempt to reconstruct the outlines of their life together, see Stockton, “Venn Family,” 468–73.

receiving credit for ongoing work, or may have withdrawn from historical work due to ongoing physical and emotional hardships.<sup>42</sup> Perhaps she simply found other interests more compelling; Susie already enjoyed some success as an author in her own right, having anonymously published three novels at the time of her historical collaboration with John. She would go on to publish another two (the final novel at last bearing her name) as well as earning a reputation as a “keen social worker” in Cambridge.<sup>43</sup>

John, meanwhile, continued to investigate aggregates of Caius and Cambridge students past and present, with a growing confidence in the broader value such study could claim. He dabbled in anthropometry when in 1885 the eugenicist Francis Galton came to Cambridge and facilitated the systematic measurement of university men.<sup>44</sup> Though evidently intrigued by eugenics, he preferred to study the kinds of men Galton prized historically rather than physiologically. He dreamed of expanding the *Admissions* he had edited with Susie into a more textured biographical history with a succinct personal account of each member. In 1896 Venn published a brief notice in the college magazine *The Caian* soliciting subscribers for what was sure to be an expensive project. Noting that a college history “in the ordinary sense of the term” could do little to improve upon existing accounts of Caius, he proposed a different tack:

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<sup>42</sup> Few details of her struggles are available, but hints appear in the couple’s correspondence, Caius Venn Papers, C6.

<sup>43</sup> “Mrs. Venn,” 16. Her novels are *The Gwillians of Bryn Grillian* (London: Smith, Elder, and Co., 1876); *The Dailys of Soddan Fen* (London: Richard Bentley and Son, 1884); *Four Crotchets to a Bar* (London: Smith, Elder, and Co., 1881); *Some Married Fellows* (London: Richard Bentley and Son, 1893); *The Husband of One Wife*, (London: Hurst and Blackett, 1894).

<sup>44</sup> John Venn, “Cambridge Anthropometry,” *The Journal of the Anthropological Institute of Great Britain and Ireland* 18 (1889): 140–154. On Galton, statistics, and eugenics, see Ruth Schwartz Cowan, “Francis Galton’s Statistical Ideas: The Influence of Eugenics,” *Isis* 63, no. 4 (1972): 509–28; Donald MacKenzie, *Statistics in Britain 1865–1930: The Social Construction of Scientific Knowledge* (Edinburgh: Edinburgh University Press, 1981); Porter, *Rise of Statistical Thinking*, chapter 9; Alain Desrosières, *The Politics of Large Numbers: A History of Statistical Reasoning*, trans. Camille Naish, (Cambridge, Mass.: Harvard University Press, 1998), chapter 4.

But the *Biographical History*, in the shape of a complete and descriptive Admission List, is a comparatively new field; and such an attempt to give a continuous presentment of the life, and social and intellectual outcome of our ancient house, seemed worth following out. For nearly five centuries and a half students have been gathered into these walls and have departed hence to take their place in the world. The total number of ascertained names is about 8000, and of these about three-fourths have been identified, in the sense of obtaining some clue, more or less complete, as to their subsequent career. Besides the link of personal and local attachment, therefore, such a work as is here proposed cannot but offer much interest to every student of the successive phases of the religious, intellectual, and social development of our country.<sup>45</sup>

Venn's pitch hinged on the nested levels of attachment that characterized the identity of historical individuals. His emphasis moved outward from personal and local connections to the shared college membership linking thousands of men over half a millennium, all the way to the even larger national context on which he proposed to cast new light. He asserted that his project would achieve importance beyond Cantabrigian nostalgia because the lives it would document were sufficiently numerous to chart the religious, intellectual, and social history of Britain. With this claim for the power of biographical history in general, he staked out a historiographic position on the epistemic worth of studying large numbers of individuals.

Venn's reference to the "new field" of biographical history clearly invoked the recently launched *Dictionary of National Biography*, the first volume of which had appeared in 1885.<sup>46</sup>

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<sup>45</sup> J. Venn, untitled notice, *The Caiian: The Magazine of Gonville and Caius College* 5, no. 3 (1896): 149–50, at 150.

<sup>46</sup> *Dictionary of National Biography*, 63 vols., ed. Leslie Stephen and Sidney Lee, (London: Smith, Elder, & Co., 1885–1901). On the *DNB*'s relationship to the development of professional historical research in Britain, see Brian Harrison, "'A Slice of Their Lives': Editing the *DNB*, 1882–1999," *English Historical Review* 109 (2004): 1179–201.

Its inaugural editor Leslie Stephen (1832–1904) happened to be Venn’s first cousin. Under Stephen’s editorship, the project sought to “supply full, accurate, and concise biographies of all noteworthy inhabitants of the British Islands and the Colonies (exclusive of living persons) from the earliest historical period to the present time.”<sup>47</sup> Thus Venn did not have to look far for a model of ambitiously thorough biographical history. Lawrence Stone would one day call the *DNB* the “supreme achievement” of the Victorian “pursuit of information about the individual dead.” Stone saw little purpose in that pursuit, however, remarking that “these obsessive collectors of biographical information belong to the same category of anal-erotic males as the collectors of butterflies, postage stamps, or cigarette cards,” and citing Venn among them.<sup>48</sup> (Stone’s disdain for the genre echoes that of Stephen’s daughter Virginia Woolf, who may have had her father’s *DNB* in mind when she disparaged fiction in which “the record ... becomes at times merely a chronicle” and “truth peters out into a thin-blooded catalogue”; she likely paid no attention to the less famous collegiate chronicles of her cousin once removed.<sup>49</sup>) These “unreadable volumes,” Stone held, only became useful after World War I, when professional historians developed the method of prosopography to “construct an intelligible picture of society and politics” out of the Victorians’ raw material.<sup>50</sup>

That these massive works did not achieve the specific historiographic goals that later motivated Stone does not mean the Victorians lacked a nuanced understanding of the historical relationship between the individual dead and the society in which they lived. Stephen was attuned to the challenges of constructing an intelligible picture of both. He attempted to balance

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<sup>47</sup> “The Dictionary of National Biography: A Statistical Account,” in Sidney Lee, ed., *Dictionary of National Biography* 63 (1900): v–xxii, at vi.

<sup>48</sup> Lawrence Stone, “Prosopography,” *Daedalus* 100, no. 1 (1971): 46–79, at 49.

<sup>49</sup> Virginia Woolf, “Phases of Fiction,” in Virginia Woolf, *Collected Essays* (London: The Hogarth Press, 1924), 2:56–102, at 63.

<sup>50</sup> Stone, “Prosopography,” 49.

sustained attention to outstanding individuals—a narratively tractable project—with an awareness that the unfolding of intellectual history consisted largely in the “thousands of inferior thinkers ... dealing with the same problems” as those philosophers he considered “by far the ablest,” and often not causally influenced by the writings of better remembered exemplars.<sup>51</sup> Victorian historians understood that the relationship between individuals and collectives posed a difficult problem, and it was one that Venn’s Moral-Scientific work on probability and logic prepared him to confront. He published his *Biographical History of Gonville & Caius College 1349–1897* in three volumes from 1897 to 1901. Totalling nearly sixteen hundred pages, it may reasonably be judged “unreadable”—but we must also attend to the practices of unreadability, of which Venn was well aware. “It would be ridiculous,” he conceded, “to suggest that anyone should ‘read’ the contents of a volume like this, in the sense in which a continuous narrative is read.”<sup>52</sup> Venn knew that readers would consult the work in bits and pieces rather than digest it as a coherent whole.<sup>53</sup>

One model for consulting a work this large was to sample passages more or less at random. Like the *Admissions*, the *Biographical History* presented a long series of individual records, but it added significant flesh to the demographic bones, inviting the reader to extract amusing and illuminating details. Venn reported, for example, that James Hartstongue, admitted in the 1540s, probably became a lay rector in South Repps, Norfolk, where a 1597 diocesan visitation penned a punning disapproval of his church’s upkeep: “the seates in the churche are

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<sup>51</sup> Leslie Stephen, *History of English Thought in the Eighteenth Century*, 2nd ed. (London: Smith, Elder, & Co., 1881), 1:2. For a recent discussion of Stephen’s historical thought, see Marco de Waard, “History’s (Un)Reason: Victorian Intellectualism from J. S. Mill to Leslie Stephen,” *Victorian Studies* 53, no. 3 (2011): 457–67.

<sup>52</sup> Venn, *Biographical History*, 1:xxi.

<sup>53</sup> On the long history of practices of consultation reading, see Ann Blair, *Too Much to Know: Managing Scholarly Information before the Modern Age* (New Haven: Yale University Press, 2010).

very fowly kept, with birdes and fowles.”<sup>54</sup> We learn that Henry Saint John, an Eton boy from Battersea admitted in 1668, would go on to murder one Sir W. Estcourt “in a sudden quarrel at a supper party” in 1684. He was able to buy a £16,000 reprieve and went on to live another half century. He died in 1742, leaving a copy of Proclus’ commentary on Plato to the college library.<sup>55</sup> There is evidence that contemporary readers engaged in precisely this sort of selective sampling. In a short discussion of the *Biographical History* appearing in the *The Caian*, an anonymous author quoted Venn’s caution against continuous reading, then remarked, “But in the mere process of cutting the pages we are attracted by quaint glimpses of ancient College life and customs, which clothe with a human interest the names they severally illustrate.”<sup>56</sup> The article went on to present a few episodes presumably happened upon with page-cutting serendipity. Even if the reviewer did not literally find those exact anecdotes on his first pass, the suggestion that he did foregrounds the materiality of the printed historical series: Venn had produced a large work. Indicative details of human interest had to be literally cut out of a mass of paper as well as figuratively cut out of an avalanche of drier data points.<sup>57</sup>

Though the *Biographical History* resisted continuous reading, it contained readable stories among its seemingly endless entries, and Venn embraced the curatorial work of extracting them for readers. He regularly published approachable essays in the *The Caian*, and in 1901 he put out *Caius College*, a work of narrative prose synthesizing much of the three-volume study. In 1913, he published *Early Collegiate History*, a collection of essays and addresses drawing predominantly upon the *Caius* history he knew so well, but gesturing toward a more general

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<sup>54</sup> Quoted in John Venn, *Biographical History of Gonville and Caius*, 3 vols. (Cambridge: Cambridge University Press, 1897–1901), 1:33.

<sup>55</sup> Venn, *Biographical History*, 1:435.

<sup>56</sup> “Gleanings from the College ‘Biographical History,’” *The Caian: The Magazine of Gonville and Caius College* 8, no. 2 (1899): 167–71, at 167.

<sup>57</sup> I use “avalanche” here in conscious invocation of Hacking’s “avalanche of printed numbers”; see Hacking, *Taming of Chance*, 2–3, 27–34.

Cantabrigian past. He dismissed social differences among the colleges as a recent development, presenting Caius as a sample of Cambridge history in general: “On the whole the several Colleges may be considered to have been doing similar work, and doing it with similar efficiency” up to at least the mid nineteenth century.<sup>58</sup> He did not presume to give the final word, though, hoping he might “encourage others to enquire into the past history of whatever corporation they may belong to; and, in particular, to trace in the course of the events so displayed the main currents of the stream of national history.”<sup>59</sup> The proper way to understand British history, in Venn’s eyes, was to study the histories of certain corporations and collectives that fell within the nation.

Collective biography could also furnish knowledge more systematic than narrative. Ultimately Venn considered his project’s sheer unreadable bulk an epistemic asset, forbidding as it may have been: through scale, he sought the synoptic view that Stone believed the Victorians had ignored. The sequential presentation of individuals, Venn asserted, offered a means of apprehending larger collectives statistically. He argued that historians had been remiss to disregard the numerical study of great aggregates of people:

The design of this work has obliged me to study a number of records in the various episcopal registries which are very seldom consulted, and which the regular historian has hardly found it worth his while to consult at all. And, it must be remembered, the number of cases with which we are concerned, though dealing only with a single college, are still sufficiently large to claim the steadiness and generality which may be called statistical,

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<sup>58</sup> Venn, *Early Collegiate Life*, preface.

<sup>59</sup> Venn, *Early Collegiate Life*, preface.

and therefore to furnish a tolerably fair sample of what was going on throughout the country.<sup>60</sup>

Still attuned to the statistical meanings of aggregates, Venn deemed the members of Gonville & Caius a useful sample of British history. That the sample included only men evidently did not strike Venn as a noteworthy shortcoming, nor did he comment on the many millions of British subjects living in the Empire's vast colonial holdings. (He did, however, reflect on the growth of the Empire as an eventual destination for Caius men, observing that "till about the end of the last century ... There were no 'upper class emigrants' worth taking into account, who had to be enquired for in the Colonies."<sup>61</sup>) Venn presented historical inquiry as fundamentally statistical, and he saw the college as intersecting with the right clerical and professional series for its history to trace what he considered the relevant strands of a larger British story.

Contained as they were within larger collectives like the nation, colleges could also be broken down further into overlapping series of members—like the circles of a Venn diagram, meaningful human collectives often intersected in complicated ways. As Venn himself used the language of "intersections" and "intersecting" circles, I neither avoid these terms nor consider them anachronistic, but I do not suggest Venn's thought constituted anything resembling today's concept of intersectionality *avant la lettre*. If anything, Venn represents the *la lettre avant la idée*: he recognized that human beings belong to multiple overlapping collectives and he employed literal geometric intersections to illustrate that complexity on paper, yet in speaking of intersecting classes he never speculated as to how the emergent characteristics of a class might *not* be exhausted by a description of the classes at whose intersection it sat.<sup>62</sup>

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<sup>60</sup> Venn, *Biographical History*, 1:xxi.

<sup>61</sup> Venn, *Biographical History*, 1:x.

<sup>62</sup> Thus his consideration of intersections stands in contrast to, rather than anticipation of, the pathbreaking Kimberle Crenshaw, "Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of

Venn highlighted in particular the differential intersection of the series of Gonville & Caius members with class-based series within British society. He reflected on the early modern institution of the sizar system, wherein poor students worked as butlers and stewards to the wealthier students. In exchange for their service they received room and board and were “in all other respects ... treated as ordinary students.”<sup>63</sup> Venn seemed to admire how the sizars could rise “according to their merits and capacity” and this does seem to have happened in practice: half of the eight masters succeeding Dr. Caius began their education as sizars (as had Isaac Newton at Trinity in 1661).<sup>64</sup> In contrast, Venn chided his own century for imagining a college should be a series without internal difference: “Modern sentiment ... regards the whole body of the students as a sort of family or society in a sense which cannot be predicated of a village, parish, or town; and holds therefore that social distinctions which are right enough in the latter must be excluded from the former.”<sup>65</sup> Venn considered the student body a class in the logical sense of an analytic aggregate, not in the political-economic sense of a group sharing material conditions. He held that the students were more like a village than a family, taking for granted that one would never expect wealth and wellness to be distributed uniformly across a village. The differences internal to the college—i.e. its differential intersections with other social groupings—were precisely what made it an epistemically useful construction for the historian.

Venn’s analogy to villages, parishes, and towns, however, highlights his decision *not* to write histories of any of those series. The scholarly attention he devoted to his university, his family, and above all his college suggests that he understood these series as overlapping with

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Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics,” *University of Chicago Legal Forum* 1989, no. 1 (2015): 139–67.

<sup>63</sup> Venn, *Early Collegiate Life*, 131.

<sup>64</sup> Venn, *Early Collegiate Life*, 132; Richard S. Westfall, *Never at Rest: A Biography of Isaac Newton* (Cambridge: Cambridge University Press, 1981), 71–77.

<sup>65</sup> Venn, *Early Collegiate Life*, 133.

enough circles of English society to chart an illuminating synthetic history. The contingency of that choice, and indeed its obvious exclusion of vast swaths of society, gestures again toward the reference class problem, but we see here that Venn was not bothered by the reference class problem in practice. Rather, by committing decisively to the histories of his chosen series, Venn committed to an answer to that problem—not an abstract universal answer, but a particular historical one. In the movements of the class of young men fortunate enough to find themselves at Gonville & Caius over the centuries, he claimed to see “the main currents of the stream of national history.”

### Conclusion

Motto (too late) for my title page,—

“I pray you now, friend Simple by your name, which way have you looked  
for Master Caius?

Marry, sir, the City-ward, the park-ward, every way: old Windsor way,  
and every way”

John Venn, (somewhat loosely) quoting William Shakespeare<sup>66</sup>

Absent from the *Biographical History* where Venn felt it would have been so appropriate, the above epigraph evokes copious ways of inquiry, a comprehensive search for Caius, whether he be an individual fictional character or a collective comprising some eight thousand real men.

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<sup>66</sup> *The Merry Wives of Windsor* 3.1.1–5, as quoted in John Venn to H. J. Hunter, 18 May 1889, Birmingham Venn Papers, C42/9.

Venn's excerpt achieves its suggestion of completeness by omitting the omission that concludes Simple's line in the play: "... old Windsor way, and every way but the town way." Evans immediately implores Simple to "also look that way."<sup>67</sup> Venn's omission makes sense: he may reasonably have believed he had left no such way unexplored. Having spent much of his career theorizing about individuals and the aggregates that contain them, he brought this epistemic apparatus to bear on the concrete historical series that had so profoundly shaped his own life. He threw himself into that "more pleasant work" enthusiastically; he knew he had achieved impressive results.

Venn's treatment of probability, of logic, and of history exhibited a thorough coherence, one characteristic of the historical thinking of his milieu. When he introduced his diagram in 1880, it served an argument that logical propositions describe complex intersectional compartments that contain series of individuals. By the end of the century he had fully devoted his intellectual energy to antiquarian investigations premised on that conception: he studied vast series of individuals as a means to understand the institutions comprising them. This continuity recasts Venn's historical work as an illustration of his frequentist and logical views no less vivid than the diagram. Indeed, a consideration of how Venn applied his logical ideas to historical data reveals the human meaning implicit in the intersecting circles and abstract series he only seemingly abandoned in his pursuit of knowledge of the past. The project of Victorian collective biography expressed a kind of statistical historical thinking according to which large series of elite individuals constituted the most illuminating historical subject. I have suggested that the simple array of circles that earned Venn lasting fame amounts to a revealing picture of coherence, a picture decipherable in light of Venn's applied researches in the archives. His

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<sup>67</sup> *The Merry Wives of Windsor* 3.1.5–6.

diagrammatic device invited its user to scratch out intersections through a combination of empirical observation and logical analysis. As a device for inquiry, the diagram privileged the overlapping identities according to which individuals could be arranged in series. Thus did Venn diagram a theory of history.