AKA Shakespeare
A Scientific Approach to the Authorship Question
by Peter A. Sturrock
Palo Alto, Exoscience, 2013, xiii + 320 pages

Reviewed by Hanno Wember

Il est très bon esprit, mais il n'est pas géomètre
- Blaise Pascal

The book represents an absolutely unprecedented and incomparable never-before-seen approach to the authorship question. Though the author has tried to accommodate it to usual reading habits by working it into a narrative shape, the basic method of applying the theory of probability may still act as a deterrent to some readers, which would be unfortunate, since this is not only a fine book but a mighty tool to undercut the rhetoric of Shakespearean orthodoxy. The aim of the present review is to bring his unusual book closer to the reader, and this can best be done anecdotally.

Last July a friend of mine traveled to Los Angeles. In the exit hall of the airport (after an intercontinental flight), he unexpectedly met a former colleague, whom he had not seen since her retirement. He later went to his hotel, and when he wanted to check in, he stood as if rooted to the earth: Directly in front of him at the counter was his sister, whom he had not seen in three years. She had studied in L.A., but that was long ago. He at first thought he was imagining things, but there could be no doubt – it was really his sister. In the evening, he went to a concert at the Disney Hall: Maxim Vengerov, with Brahms and Lorin Maazel on the podium. In the lounge, he met a woman he immediately recognized as Eva, his first girlfriend from his youth.

A realistic story? Certainly not. A single totally unexpected meeting does rarely happen. But three of them? Not in a lifetime! The odds of rolling a six with one die are one in six. The probability of meeting your first girlfriend after 25 years at the other end of the world in a concert hall must be much lower: Maybe 1:50 or 1:1,000 or more likely 1:10,000 or even less.

The odds of rolling three consecutive sixes with one die are 1:(6 x 6 x 6) or one in 216. The chances of meeting your former colleague, your sister and your first girlfriend in L.A. (assuming you are not all from L.A.), on the other hand, must be something like 1:(1,000 x 1,000 x 1,000) or one in a billion or even less, i.e., extremely unlikely. In other words, impossible in everyday life. And now to Shakespeare.

Hamlet reported in a letter to Horatio that he had been attacked and captured by pirates. Edward de Vere, the 17th Earl of Oxford, was actually captured by pirates on a sea voyage; this is a documented fact. William of Stratford-upon-Avon is not known to have ever taken a sea voyage. According to one highly popular and successful theory, he invented the pirate episode in *Hamle*t with poetic imagination. Although the Earl of Oxford experienced the story very much like Hamlet, these events were completely unrelated and Oxford, we are told, could have nothing to do with the drama. The correlation of de Vere's live and the literary *Hamlet* must be purely coincidental. A random event with a probability of (let's say) one in 1,000.

Why one in 1,000? We'll leave this question unanswered for a while and continue to develop the basic idea – but the question will be addressed in detail before we conclude.

In *The Two Gentlemen of Verona*, a Friar Patrick is mentioned three times. An Irish monk in Milan, strangely enough. But in 1575, an Irish Friar Patrick actually traveled through northern Italy and most likely visited Milan.[1] Edward de Vere traveled extensively throughout northern Italy and was in Milan in 1575. Friar Patrick was well known in northern Italy at that time, so de Vere could easily have heard his name in Milan, and might have even met him personally. On the other hand, the merchant of Stratford never visited Italy. This seems incredible, but it may be a coincidence. A priest named Patrick shows up in a Shakespearean drama set in Milan as a mere invention at the same time that Oxford, on his visit to Milan, could have heard of the real Friar Patrick there – but this Earl of Oxford, we are again assured, could have nothing to do with the drama. Let's say the chance of this coincidence is again one in 1,000 (you doubtless have the same question as above, but see below).

For a third instance, consider that William of Stratford repeatedly attempted to attain his own coat of arms, which he finally got. But when the First Folio of Shakespeare's works was published in 1623, the coat of arms was nowhere to be found in this volume. Instead, one finds heraldic elements similar to those of the Earls of Oxford integrated into the Folio ornamentation: one on top of "A Catalogue" and the other on top of "The Tempest." These elements are calygreyhounds, hybrid creatures of antelope, deer and dog. The calygreyhound can also be found for example in black marble on the gravestone of the 15th Earl of Oxford in the Church of St. Nicholas in the village of Castle Hedingham. An almost identical ornamentation was already depicted in a book dedicated to Edward de Vere in 1582: *Hekatompathia* by Thomas Watson.[2] Again, this could be sheer coincidence. An engraver or publisher could have accidentally failed to include William of Stratford's coat of arms in the *First Folio*, and at the same time engraved the Earl of Oxford's calygreyhound in the volume. Such a thing is, theoretically, possible. Let's suppose the probability of this is again one in 1,000. Or should we say one in 100,000 (see below)?

Do you believe this? Most likely you will believe it no more than the eerie story from L.A. In conclusion, every individual fact could be a coincidence; but all three facts happening together has a chance of one in a billion (or even much less than that). It would be many times more likely for you to win the lottery.

To call these events random is absurd. We may call them "chance" only when we look at them as completely isolated events. When we consider them together, calling them "chance" is nonsense. All three examples, on the other hand, can be explained through de Vere's biographical background and his ancestry, without any additional assumptions or fig leaves. In other words, the Stratford thesis – or the theory of any other candidate for authorship – may allow Stratfordians to *explain away* each example, but only as being *accidentally* in accordance with the known facts of de Vere's biography. For each isolated example, coincidence could be a possible explanation, but as all three examples exist together, this explanation is impossible. The overall probability shrinks to become infinitesimal. Unfortunately for Stratfordians, the basic rule of probability theory states that the probabilities of stochastic, independent events are multiplied. Someone who thinks that these things could be ignored and that it would still be possible to explain each isolated example without taking the clustering of the facts into account is not only running contrary to common sense, but also shows a startling lack of basic knowledge of probability theory.

So far we have discussed only three issues. We could easily expand the list to thirty, and experts could even expand it to hundreds. The probability that all these events are just random would be unimaginably tiny (somewhere around ten to the power of negative 48, or even much smaller).

The encounters in L.A. could have actually occurred in a similar, apparently accidental way, but only if someone had arranged the encounters behind my friend's back as a surprise. But then it would have been due to deliberate planning, not random chance. And this is, for me, the only possible explanation for the huge number of extremely unlikely coincidences in Edward de Vere's biography and background and Shakespeare's works. To expect something with a probability of ten to the power of negative 48 to happen is absolutely absurd. There must be a directing force working behind the scenes. Obviously, this directing force is de Vere's biography and identity. To many, including Sturrock – Emeritus Professor of Applied Physics and Astrophysics at Stanford University – the traditional, alternative account no longer makes any sense.

One could raise the objection that the described random meetings are not comparable with literary texts. The objection is unfounded. Is rolling a die comparable with a meeting at the airport? The *events* themselves are not compared, but the odds or *probabilities* of the occurrence to which both events are subject – however different – are governed by the same statistical principles. And for random events, the laws of probability apply.

Writing a text is an "event." If two people independently write the same or very similar texts, or even parts of texts, these events are regarded as random coincidences. From the aspect of randomness, this is not different from the event of rolling a six when throwing a die. If there are several events, the laws of probability are valid.

Consider: Hamlet says to Polonius "As the grass grows . . ." (the horse starves). Edward de Vere used this proverb in his letter from 3 January 1576 to Burghley ("to starve like the horse while the grass grows"). It is generally accepted that Polonius in *Hamlet* is essentially modelled after Burghley, to whom de Vere is writing. It remains possible that the use of the proverb *and* in a similar context (Burghley – Polonius) was only by chance – however unlikely.

For equivalence or similarity in text elements, dependency is normally assumed. In this case, however, it is excluded from the Stratford theory, as it provides an explanation only by accident. But as there are different and independent events, one cannot avoid the necessity to regard the whole cluster of events and to apply the laws of probability to ascertain the plausibility of competing explanatory hypotheses.

Now to the questions mentioned above.

Although the exposition given here is basically right, it suffers from a deficiency: It cannot derive (or even estimate) an exact mathematical probability for each isolated event in the aforementioned examples and therefore does not permit a valid calculation of the overall probability. This could give a defender of orthodoxy a spurious argument for refusal. But here is where Sturrock's book takes over. To reliably apply probability theory scientifically to the issue at hand, valid methods are necessary that go far beyond the preliminary considerations of our introduction. Sturrock introduces hypothesis-testing procedures developed in astrophysics and based on Bayes' theorem; they are applied as a "basin procedure."

The mathematical foundations (Bayes' theorem, etc.) are presented and derived in the appendices to the book. Access to and understanding of them is not easy for the casual reader, but this does not affect the main approach pursued in the book. Even if the fundamental principles of the applied methods cannot be recreated without a thorough knowledge of mathematics, they are logically postulated in the book, and the implementation and results can be reproduced without detailed knowledge. By way of example, if someone searches for an explanation of why a trip to Mars (one way) takes about 255 days, one can refer to the third law of Kepler. One who knows how to handle a calculator can be easily guided to apply Kepler's law and will be able to calculate the result himself. Proof of why Kepler's law is true is not required. Whoever wants to understand the law will need to engage in further independent study. That also holds true here: There is no obstacle to a study of one's own to understand the elements of advanced probability theory. The materials are provided; they just do not belong to the core content of the book and are not necessary for its understanding.

The book is written in a relaxed and entertaining way, in the "Chaucerian" form of discussions between four people. Beatrice represents the Stratfordian camp; Claudia the Oxfordian; James is a physicist who works in Silicon Valley, who provides the essential background information for each of the discussed areas; Martin is a mathematician who works in the field of statistics, and is responsible for guiding the group whenever questions of a more technical nature arise. The authorship question is discussed in twenty-four chapters by way of selected examples of "coincidence" to which the reader is invited to assign his or her own probabilities to chart the Bayesian odds for one of three authors – Stratford, Oxford, or "Ignoto." Although often little is known definitely about many of the "events" in question, with the help of probability theory much more valid statements are possible than might be expected at first glance.

The first question is: Was Shakespeare lame? According to background information from the Sonnets (mainly 37 and 89), the question cannot be answered clearly. At least it cannot be completely ruled out that behind the metaphorical applications of the idea of lameness, the author literally was – so many have concluded – lame. Though the evidence for this interpretation does not allow for certainty, the probability of this inference is certainly higher than zero. The subsequent procedure follows in two steps, which have to be strictly separated. This is used as a general method to test hypotheses throughout the book:

1. *Evidence Analysis*
2. *Theory* columns

Evidence analysis

The two protagonists separately give their own weighting to the following statements:

(a) Shakespeare was lame at some time in his life.

(b) Shakespeare was never lame at any time in his life.

Neither of the two statements is certainly wrong or definitively true. Different weights are possible (for example, if no further information is available, one can take into account how widespread lameness was in the general population in Elizabethan times). In any case, although the weights 0:1 (definitely not lame) and 1:0 (definitely lame) might in theory be possible, given the nature of the evidence, they are ruled out as reasonable hypotheses. In case of completely implausible assumptions, Martin or James intervenes and suggests reconsideration.

For this problem, Beatrice gives odds of 5:1 as a plausible weight, and Claudia 50:1. Both, in other words, conclude from the evidence of the Sonnets that the author was probably lame, but Claudia gives a higher weight (probability) to this hypothesis than Beatrice.

Theory columns

In the theoretical analyses, the "Stratford theory," "Oxford theory" and "Ignoto theory" (for "somebody else," a possible third candidate) are regarded separately. How plausible are each of the two statements (a) and (b) in the light of each of the three theories? New information is brought in here: remarks about his health in William of Stratford's will and in one of the Earl of Oxford's letters.

The two protagonists again give weights for each theory independently.

Here impartiality is demanded, because the issue is only how well each statement fits into each of the three theories. Personal preference should have no influence. Again, Martin and James make sure this necessary impartiality is kept. Both Beatrice and Claudia give the same weights concerning statements (a):(b). 1:10 (for Stratford), 20:1 (for Oxford) and 1:10 (for Ignoto). Both obviously agree that the Oxford theory better fits statement (a) and the Stratford/Ignoto theories better fit statement (b).

Now the theoretical analysis has to be correlated with the evidence analysis. This is where the mathematician steps in; the "post-probabilities" are calculated using the "basin procedure" (the formulas are in the appendix), and Martin tells us the results. The "post-probabilities" for the theories are

- 0.15 for Stratford, 0.75 for Oxford and 0.15 for Ignoto (correlating with Beatrice) and

- 0.09 for Stratford, 0.82 for Oxford and 0.09 for Ignoto (correlating with Claudia).

These decimals can also be read as percentages (0.15 equals a probability of 15%, 0.75 equals 75%, etc.).

This is the testing of hypotheses. The results differ somewhat for each protagonist, but they all point in the same direction. The "personal factor" of the given weights has not vanished, but is neutralized by intrinsic objectivity of the method of having different parties, each bringing her own assumptions and biases to the project, estimate separate weights – a process the book invites the reader to join in by making his or her own estimates for each event.

This method is then applied to further examples, including the following:

1. Comparing William from Stratford with known contemporary writers (Diana Price's study is used as the baseline)
2. Shakespeare's education
3. Shakespeare's geographical knowledge
4. William Shakspere's handwriting
5. The design and publishing history of the *First Folio*
6. The content of *Shak-Speare's Sonnets*
7. The *Sonnet* dedication

The examination is carried out for seventeen fields, and the method is further significantly enhanced: First, in case more than two alternative statements (a) and (b) are to be tested, the statements can be considered in parallel. Furthermore, and this is crucial, the cumulative probabilities are calculated continuously. Resulting from the increasing number of the individual "post-probabilities" is an overall probability presented as the "running degree of belief," which is reproduced graphically for each section as the narrative proceeds.

The relationship between the "simple" probabilities (a number between 0 and 1) and the "degree of belief" (the book depicts numbers between +53 and -261) is derived mathematically. However, the reader can simply take it from the table (p. 50) to understand its use without the derivation. The conversion of probabilities into measures of "degree of belief" constitutes an advantage, as very small probabilities can be expressed only in powers of 10, which is impractical and not suitable for graphical representation.

In a book review of a crime novel, it is frowned upon to spoil the ending. However, this is not a crime novel but an investigation via the scientific method of mathematical statistics and probability, and we can therefore say that the result is overwhelming. Even though there is a range of variation between the results of the pro-Stratford and pro-Oxford protagonists, the overall result is perfectly clear. In both cases, the probability calculation compels the exclusion of the hypotheis of William Shakspere of Stratford as author, and any other "Ignoto" candidate is also ruled out by the same procedure. I will withhold here how overwhelming the probability for the Earl of Oxford really is; this will be found in the book itself.

As noted, a key feature of the book is that it offers every reader to participate and to give his own weights – independently from Beatrice and Claudia – and the necessary calculations will be made on a webpage, specially built for this purpose. So the reader can find out his personal results. An interactive book!

Sturrock has succeeded with a brilliant idea. What common sense suggests from numerous facts, he has put in an unbiased examination and on a rigorous scientific basis. He has solved the authorship question in a very unconventional way. But will *AKA Shakespeare* find the attention it deserves and generate the possible effects? Probably not. Orthodoxy will adhere to previously practiced tactics and the book will be ignored: any serious discussion would be fatal for the Stratford theory. But the little resonance and feared small-scale dissemination of the book, however, is only partly due to this fact. Regardless of the brilliant idea and convincing methodology, the book also shows certain shortcomings, and owing thereto only few will read it duly and assess the implications.

Unfortunately the author may have underestimated to a considerable extent the reserve average readers have to appreciating mathematical representations. This is perhaps understandable for someone who professionally deals on a daily basis with colleagues and students who do not have this fear. But it is regrettable and unfortunate to see this in a book presented to a public of people primarily interested in literature. The two protagonists, Beatrice and Claudia, who have no specific education in mathematics and statistics, seem to have no difficulty in immediately understanding the methods introduced and explained by Martin and James. So they are welcome conversational partners for the two gentlemen and they further the progress of the book, but it would be more realistic to present them as more like average readers, who will have greater difficulty in understanding the abstruse mathematical principles on which the book depends.

The shortcomings of the book are mainly those of didactic presentation. The calculations of, for example, the "post-probabilities" and the "running degree of belief" are done by Martin, who in turn hands it over to "Prospero," a software that applies the formulas from the appendix. "Prospero" conjures up the figure of a magician, and this will add a hint of mystery to the rational calculations, which is somewhat unfavorable to the ideals of transparency. It would have made more sense to indicate that the calculations are simple in principle but cumbersome in size, which is why they are given to a computer as a willing (or forced) "servant."

It would also be preferable to disclose at least the initial calculations of the "post-probabilities" (46), and the applied formula (45) should be developed with numerical values and without the Σ sign. The interested reader should be able to find, in addition to formula B17 (301), at least one guideline on how to do the calculation with a calculator (only the four basic arithmetic operations are required).[3]

Conversely, on page 48 ff., the reader is bothered with too many formulas and calculations. Many readers will be discouraged by the introduction of the log sign. It would have been better to banish this whole derivation to the appendix and present the results only as a table. This also applies to the abstract calculation section on pages 61-62. It would have made more sense to simply show in simple numbers what is involved and to present the general formula with a notation unfamiliar to most readers in the appendix.

These didactical shortcomings do not discredit the scientific quality and convincing results of the book, but are obstacles for the potential target group and are a bar to wider distribution. Many potential readers may, unfortunately, give up at the latest on page 46, because they may think they do not have enough knowledge in mathematical statistics. This may even lead those truly interested in the subject matter to not read it. Conversely, those who could read it easily due to fluency in the mathematical content and notations may avoid the book because they are not so interested in the authorship question.

Nevertheless, a few historical errors and inaccuracies do occur; although these do not diminish the main theories of the book they should be mentioned here for the sake of completeness (I owe these hints to Robert Detobel). On page 155 is written, "Oddly enough, a ship owned by Oxford was wrecked in the Bermudas." The ship in question was called the *Edward Bonaventure*, but it was not owned by the Earl of Oxford. Edward de Vere intended to buy the ship on behalf of Martin Frobisher in 1581, but Frobisher withdrew from the venture and was replaced by Edward Fenton. It is doubtful whether the Earl of Oxford ever actually owned the ship. On page 196 is written, "Claudia: I wonder if it is purely coincidental that Lord Burghley, who had been in control of publications as Lord Chamberlain, died in 1597?" Burghley died on 4 August 1598, four to five weeks before *Palladis Tamia* of Francis Meres was entered in the Stationers' Register. Burghley was Lord (High) Treasurer, not Lord Chamberlain, and was elevated to the peerage in early 1572. But as stated, these errors have no impact on the main theories.

Even if the didactic approach has to be adjusted, it does not affect the content or the brilliant idea. The book is a genuine performance that can hardly be overestimated as a big win. The author, who applies this completely unfamiliar methodology to the authorship question and shows how it can be solved, deserves admiration and thanks.

One who does not want to follow the arguments of the book, or denies the consequences it compels, should be well versed in the theory of probability and mathematical statistics.

Those who try to argue generally rather than mathematically ("It is 'only' probability; the reality could be different") are similar to the Chevalier de Méré (1607-1685). Blaise Pascal (1623-1662), one of the founders of probability theory, wrote in a letter to Pierre de Fermat (1601-1655) about him: "Il est très bon esprit, mais il n'est pas géomètre" ("He has a smart mind but is not a mathematician" – he has no idea).

Endnotes

1 Edward Holmes, *Discovering Shakespeare*, Durham: Mycroft Books 2001, p. 206 f.

2 Charles Bird, "Shakespeare und der Caleygreyhound," *Neues Shake-speare Journal*, Band 5, Buchholz 2000, S. 109 ff.

3 Fort the interested reader such a guideline with the numerical calculation is installed at http://www.shakespeare-today.de/index.223.0.1.html