Art and mathematics

Da Vinci, codes and all that

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Pain and Abel

IN SPITE of its wooden dialogue, sketchily drawn characters and a plot that fails to fulfil its considerable promise, "The Da Vinci Code" has been a sensational bestseller. Dan Brown's mix of murder and maths, Leonardo and the Holy Grail is "occult lite"; it lacks the feeling for maths and medieval mystery conveyed in "Foucault's Pendulum", Umberto Eco's fictional trail through the occult, published 16 years ago. Yet "The Da Vinci Code" is well on the way to achieving cult status.

For one thing, it is beginning to spawn non-fictional supporting material. Simon Cox's "Cracking the Da Vinci Code" purports to be the "guide to the facts behind the fiction". Arranged as an alphabetical aid to people, places and groups mentioned in Mr Brown's novel, it repeats things said in the novel with scarcely any additional illumination, and without the benefit of Mr Brown's plot which is, at least until the end, fairly taut.

In "Math and the Mona Lisa", Bulent Atalay attempts to address the actual art and science that gave Da Vinci his enduring fame. Two chapters two-thirds of the way through the book actually discuss Da Vinci, but the rest merely mention him tangentially while wandering on a disconnected journey through the totality of western art and science. At one point Mr Atalay, a professor of physics in Virginia, baldly asserts that Aristotle is the "most influential of all philosophers". Perhaps this is true, but it needs some justification.

The book makes much of the "golden ratio", or *phi*, a number which does indeed recur in art and nature. *Phi* has the unique property that subtracting the number one from it yields its inverse—rectangles whose sides are in the ratio of *phi* are said to be particularly pleasing. It is also the ratio that is approached as successive terms of the Fibonacci sequence—1, 1, 2, 3, 5, 8...—are divided by one another. (Terms in the sequence are the sum of the two preceding terms, so the next term here is 13.) Fibonacci, whose real name was Leonardo of Pisa, was among the first to introduce Arabic numerals to Europe, in 1202.

No doubt, the nature of *phi* is an interesting subject, and it features in Mr Brown's twisty plot. But "Math and the Mona Lisa" is not the first book to list recurrences of *phi* in various places. Mr Atalay, it seems, once visited the pyramids as a young boy and found *phi* there. (He conveniently provides supporting evidence in the shape of a picture of himself at Giza.)

Another recent book discusses the achievements of both Leonardos far more captivatingly as it builds up to the story of a remarkable proof made in 1824 by Niels Abel, a 21-year-old Norwegian mathematician, who died in poverty a scant five years later. Abel proved that equations of the fifth order cannot generally be solved. If the exact meaning of this sentence baffles you, read "Abel's Proof". It gives a clear exposition of the underlying mathematics and eloquently discusses the lives of mathematicians up to Abel's time.

Indeed, Peter Pesic's tale of how maths came to be is as exciting as any fiction. In contrast to Mr Atalay, who uses Da Vinci merely as a peg from which to hang his own rumpled cloak of a book, Mr Pesic uses Abel's proof as a focal point, which he approaches and moves away from with a measured, mathematical pace. He concludes with a cryptic page from one of Abel's notebooks which, riddled with drawings, writings and numbers, is reminiscent of Da Vinci's own scribblings. In the midst of the equations is scrawled a prayer: "Our Father who art in Heaven, give me bread and beer. Listen for once." The Norwegian mathematician and the Italian artist, though separated by centuries, might have got on rather well.

Cracking the Da Vinci Code: The Facts Behind the Fiction.
By Simon Cox.
Michael O'Mara Books; 160 pages; £6.99.

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