The Last Man Who Knew Everything: Thomas Young

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Revised Edition

With a Foreword by Martin Rees

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Postscript

Polymathy Then—and Now?

> *Although we are never likely to encounter a person with the intellectual breadth of Thomas Young again, his life and work still have implications for us today. The view that it is impossible for one man to combine competent clinical practice with serious scientific research, so eloquently expressed in the mid-seventeenth century by Thomas Sydenham, continues to haunt our teaching hospitals. Given the increasing rigidity of medical education imposed by its controlling bodies and by government, one despairs for the future of those talented few who are able to combine clinical practice with serious scientific research or equally creative activities.*
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> David Weatherall, physician and researcher, Regius Professor of Medicine at the University of Oxford, reviewing *The Last Man Who Knew Everything* in *The Lancet*, 2007 [453]

In 2007—soon after this book was first published—the Thomas Young Centre was founded by three leading colleges in London: Imperial College, King's College and University College. They were subsequently joined by Queen Mary University and the National Physical Laboratory, also in London. Their joint goal was to form an interdisciplinary alliance of leading London researchers to address the challenges of society and industry through the theory and simulation of both materials and molecules. Today, the centre consists of around one hundred research groups within academic departments including Physics, Materials, Chemistry, Earth Sciences, Biology and several branches of Engineering—located not in a separate building of its own but instead in the laboratories and conference spaces belonging to these collaborating institutions.

One of the centre's four co-founders, Michael Finnis, who joined Imperial College in 2006, where he is now a professor working in the

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departments of Physics and of Materials, suggested the name of the new centre. In 2023—the 250th anniversary of Young's birth—Finnis explained to me how his proposal came about. First, he consulted two senior colleagues interested in the idea of such a centre. They put forward at least two possible suggestions for names based on eminent British scientists who had been awarded Nobel prizes for physics in the early twentieth century: the 'Rayleigh Centre', after the mathematician and physicist Lord Rayleigh (who, as we know, greatly admired Young's Royal Institution lectures), and the 'Thomson Centre', after the physicist J. J. Thomson—the discoverer of the electron. However, Finnis thought that these two names might be less appealing to materials scientists and engineers than to physicists. Then, one morning in 2006, while browsing his copy of *Physics World*—the monthly magazine of the UK's Institute of Physics—he happened to read an extensive article, 'Thomas Young: physicist, physician and polymath'[454], written by me around the time of the appearance of this biography. 'I immediately thought this is it! The Thomas Young Centre it would be', said Finnis. He then explained:

> My thought, which was accepted by colleagues without any quibbles, was that our Centre would be interdisciplinary, involving chemists, engineers, physicists and materials scientists. And all of them would have learned at some time about one or more of Young's achievements: Young's modulus for materials scientists and engineers, Young's slits for physicists, the Young-Dupré equation [formulated by the mathematician and physicist Athanese Dupré long after Young's death] for physical chemists. These are not compartments that are helpful in research, and Thomas Young seemed to represent the epitome of interdisciplinary thinking.[455]

This was undoubtedly an appropriate tribute to a great British scientist. But we must also note that the Thomas Young Centre appears to be the only organisation in the world named after Young (although the Institute of Physics does award a Thomas Young medal and prize, first given in 1963 to the co-inventors of the laser). Polymathy tends to suffer when set against specialisation and genius. Universities and professions are chiefly organised for the benefit of specialists, not polymaths. Moreover, in addition to greater funding, specialists typically receive more recognition than polymaths, as evidenced by the Nobel prizes' emphasis on domain-specific advances; very few Nobel laureates in science have been polymaths. And yet, some of the greatest scientific discoveries and works of art have benefited from interdisciplinarity and polymathy—as witness the life and work of Leonardo da Vinci.

My personal experience as a biographer since the 1980s supports this observation. Over three decades, I have published six biographies of brilliant scientists and artists (named in the next paragraph). They demonstrated in their lives a spectrum of curiosity ranging from full-scale polymathy, as with Young, to focused specialisation, as with the physicist Albert Einstein.

Rabindranath Tagore: The Myriad-Minded Man (1995) describes the Indian poet, novelist and essayist, a Nobel laureate, who was also a celebrated composer of songs, including India's national anthem; a highly original, self-taught, modernist painter whose work was exhibited internationally; and a freedom fighter second only to Mahatma Gandhi, who called Tagore 'The Great Sentinel'. *Satyajit Ray: The Inner Eye* (1989) concerns the Indian film director, awarded an Oscar for his lifetime achievement, who not only composed the music and songs for his many feature films but was also a professional illustrator, a gifted caricaturist and a bestselling detective-story writer in India. *The Man Who Deciphered Linear B: The Story of Michael Ventris* (2002) considers the British linguist who never attended a university and trained formally as a modernist architect but who somehow, with the help of this architectural training combined with his amazing linguistic gifts, deciphered Europe's earliest readable script, Linear B: the pre-Homeric script of the ancient Mycenaeans and Minoans. *Cracking the Egyptian Code: The Revolutionary Life of Jean-François Champollion* (2012) analyses the French philologist (and rival of Young) who deciphered the Egyptian hieroglyphs and thereafter specialised in the history and culture of ancient Egypt, becoming the world's first professional Egyptologist. Lastly, *Einstein on the Run: How Britain Saved the World's Greatest Scientist* (2019) tells the story of the German-born physicist's half-century entanglement with the science, politics and culture of Britain, which gave him sanctuary from likely assassination by the Nazis in 1933.

Einstein, the most specialised and least polymathic of these six individuals—notwithstanding his lifelong love of violin-playing and his periodic forays into international politics (most notably with the philosopher Bertrand Russell in the 1955 Russell-Einstein Manifesto warning against nuclear weapons)—is without question the most celebrated. Egyptologist Champollion is better known to the world than the polymathic Ventris. Film director Ray is nowadays more familiar than the even more polymathic Tagore, at least outside of India. Finally Young, the most polymathic of the six, is surely the least known, especially to non-scientists. Well over 1700 individual books about Einstein are listed in library catalogues, whereas less than a dozen have been written about Young. Without doubt, specialisation is generally more productive of attention, fame and posthumous reputation than polymathy in today's world—certainly more than it was during Young's lifetime.

How many polymaths have flourished in the two centuries since Young's death? Here are some notable examples from the nineteenth century. Charles Darwin contributed to zoology, botany, geology, palaeontology and philosophy. Hermann Helmholtz was active in physics, medicine, anatomy, the perception of art and the theory of music. Karl Marx was reputed for his work in philosophy, history, economics, sociology and politics. Florence Nightingale, best known as the founder of modern nursing, was an important social reformer and statistician. John Ruskin, celebrated for his art criticism, was active in geology, history, economics and philosophy. In the twentieth century, there were perhaps fewer famous polymaths, but polymathy certainly remained significant. Linus Pauling contributed not only to physical chemistry and mathematical physics but also to biology, medicine and international peace—for which he received two Nobel prizes. Erwin Schrödinger was primarily known for his work in physics, but is remembered, too, in experimental psychology, biology and philosophy. Alan Turing, the computer pioneer, was also a mathematician, philosopher, cryptanalyst, engineer and biologist. Alfred Wegener, best known today for his concept of continental drift, was a climatologist, geologist, geophysicist, meteorologist and polar researcher.

Of course, the number of polymaths we identify depends on our definition of polymathy. How many separate fields must an individual draw upon or contribute to, in order to be considered a polymath? Opinions inevitably vary. The cultural historian Peter Burke, in his major study *The Polymath: A Cultural History from Leonardo da Vinci to Susan Sontag*, published in 2020, offers a list of 500 'Western Polymaths' beginning around 1400, about half of whom postdate the life of Young. Introducing the list, Burke does not define 'polymath' but cautiously notes: 'This list ... is not intended to form a canon: I am sure that I have missed some important figures, especially when they come from countries whose languages I cannot read.' (Hence his list's omission of, for example, Tagore, who wrote mainly in Bengali.) 'A round number has been chosen in order to make obvious the necessarily arbitrary nature of this kind of choice, dependent on the knowledge of a single individual. It is not assumed that the contributions of all these 500 individuals were equally important'.[456]

Burke's list includes all of the names mentioned in my last-but-one paragraph, with the surprising exception of Nightingale. Also included are: the philosopher Jacques Derrida because of his interest in linguistics and literary criticism; the art historian Ernst Gombrich because of his interest in the psychology of perception; the novelist Vladimir Nabokov because of his entomological study of butterflies; and the fiction/non-fiction writer Charles P. Snow because of his research in physical chemistry—in addition to other individuals who are normally regarded more as specialists than as polymaths, such as the engineer Vannevar Bush, the economist John Maynard Keynes, the writer and publisher Victoria Ocampo and the writer and literary critic Edmund Wilson. But if these eight names are considered to be polymaths, then surely Einstein, too, should qualify, for his work as a peace activist as well as a physicist, as should Ventris, for his work as an architect as well as an archaeological decipherer, and perhaps even Champollion, for his knowledge of many languages in addition to ancient Egyptian. Yet none of this latter trio appears in Burke's list.

To understand modern polymathy versus specialisation, let us focus a little on the life and work of Ventris who, like Young, wanted to decipher a mysterious ancient script. The decipherment of Linear B in 1952–1953—an interdisciplinary breakthrough cutting across art and science that was widely dubbed the 'Everest of Greek archaeology' because it happened to coincide with the climbing of Mount Everest in 1953 (not to mention the discovery of the double-helix structure of DNA)—illustrates well the strengths and the weaknesses of both specialisation and polymathy. Ventris's decipherment required both self-training and exceptional creativity, but no doctorate, nor even an undergraduate degree, in classics.

The challenge of reading the ancient Minoan scripts excavated at Knossos in Crete in 1900 by the archaeologist Arthur Evans—which Evans dubbed Linear A and Linear B—attracted the attention of dozens of scholars during the first half of the twentieth century. However, the key figures in the decipherment were John Myres, Alice Kober, Emmett Bennett Jr, John Chadwick and Ventris. The ageing Myres was professor of ancient history at the University of Oxford until 1939, and was widely considered a leading authority on the ancient Greeks; in addition, he was the custodian and editor of the Linear B tablets after the death of his friend Evans in 1941. Kober was a classicist with a PhD in Greek literature from Columbia University, who had developed a consuming interest in Linear B in the mid-1930s that lasted until her death in 1950. Bennett was an epigraphist, with second-world-war experience of cryptography, who had written a doctorate on Linear B under the archaeologist Carl Blegen at the University of Cincinnati in the late 1940s; soon after this, he moved to Yale University. Chadwick had an undergraduate degree in classics from the University of Cambridge but no PhD; after wartime service as a cryptographer at Bletchley Park, and work in Oxford on the staff of the *Oxford Latin Dictionary*, he became a lecturer in classics in Cambridge in 1952, the year he began collaborating with Ventris.

Unlike Myres, Kober, Bennett and Chadwick, Ventris never went to university, as mentioned earlier, and had no academic training in classics other than at school, where his passion to decipher Linear B began as a fourteen-year-old. Instead, he underwent student training at the Architectural Association School in London in the 1940s—interrupted by war service as a bomber navigator—before beginning to practice architecture professionally, with a keen commitment to modernism. (Family friends included the architect and designer Marcel Breuer, the sculptor Naum Gabo and the painter Ben Nicholson.)

Myres, Kober, Bennett and Chadwick were all older than Ventris; were far better trained than him in classical studies; and had more opportunity than the self-employed Ventris to concentrate on the problem of 'cracking' Linear B. Yet all four professional academics failed, whereas he succeeded. One is compelled to ask—why?

There were many reasons (discussed in my biography of Ventris). The two most important were: first, the fact that Ventris was knowledgeable in three very different domains—classics, modern languages and architecture; and second, that as an architect he did not have the same investment in orthodox thinking about Linear B as the classics 'professors'. Myres remained hamstrung by the incorrect theories of the extremely influential Evans, long after Evans's death. Kober, though original and brilliantly logical, was temperamentally unwilling to hazard guesses. She wrote of Linear B in 1948: 'When we have the facts, certain conclusions will be almost inevitable. Until we have them, no conclusions are possible.'[457] Bennett, though highly intelligent, suffered from scholarly over-restraint, too: he publicly greeted Ventris's initial 1952 decipherment with a 'fine set of cautious, non-committal phrases' (as he privately admitted to Ventris).[458] In a sense, Ventris succeeded because he did *not* have a degree or a doctorate in classics. He had enough training in the subject, but not too much to curtail his curiosity and originality. As his academic collaborator Chadwick nicely confessed after Ventris's premature death, in his 1958 classic, *The Decipherment of Linear B*:

> The architect's eye sees in a building not a mere facade, a jumble of ornamental and structural features; it looks beneath the appearance and distinguishes the significant parts of the building. So too Ventris was able to discern among the bewildering variety of the mysterious [Linear B] signs, patterns and regularities which betrayed the underlying structure. It is this quality, the power of seeing order in apparent confusion, that has marked the work of all great men.[459]

In addition, Ventris conformed to the generally cool response to schooldays of many exceptionally creative people (including Champollion and Young, as well as Einstein, Ray and Tagore). He was above average at school, but not excellent; in fact he left school before finishing his course. He derived little inspiration from the teaching, although he did have fond memories of one teacher, who taught him classics and accidentally introduced him to Linear B and to the elderly Evans on a school expedition to a London exhibition on the Minoan world in 1936. And he was not interested in group activities, such as school team sports, preferring to remain solitary and detached. Like his great French predecessor Champollion, the schoolboy Ventris even worked secretly on decipherment at night—under the bedclothes by the light of a torch after official 'lights-out', as one of his fellow boarders in their school dormitory amusingly recalled.

But whereas in the decipherment of Linear B the polymath beat the professors, in the decipherment of Egyptian hieroglyphs the professor beat the polymath. However, in each case, key insights from both the polymaths (Young and Ventris) and the professors (Champollion, Kober and Bennett) were crucial to the successful outcome.

In my view, the single most fascinating aspect of the story of the decipherment of the hieroglyphs is that it required both a polymath and a specialist to 'crack' the code, even if Champollion would never bring himself to admit this in public. Young's myriad-mindedness provided some key initial insights in 1814–1819 (most notably the phonetic basis of some hieroglyphs)—but then his polymathy diverted him to totally unrelated subjects and worked against his making further progress. Champollion's single-mindedness hindered him from arriving at these insights in the same period—but then, once he got restarted in 1821 (after borrowing from Young's anonymously published work in the *Encyclopaedia Britannica*), his tunnel vision allowed him to begin to perceive the system behind the hieroglyphs. Both Young's breadth of vision and Champollion's narrowness of focus were essential for the revolutionary breakthrough that Champollion, alone, announced in Paris in 1822–1823.

Since their time, the ever-increasing professionalisation and specialisation of education and academic domains, especially in the sciences, are undeniable. Hence the need for interdisciplinary institutions such as the Thomas Young Centre. The breadth of individual experience that feeds genius—whether polymathic like Darwin's or specialised like Einstein's—is harder to achieve today than in the nineteenth century, if not downright impossible. Had Darwin been required to do a PhD in the biology of barnacles, and then joined a university life sciences department—rather than circumnavigating the planet on HMS *Beagle* in 1831–1836—it is difficult to imagine his having the varied experiences and exposure to different disciplines that led to his discovery of natural selection and the publication of *On the Origin of Species* in 1859. If the teenaged Vincent van Gogh had gone straight to an art academy in Paris in the 1870s—instead of spending years working for an art dealer, trying to become a pastor, and self-tutoring himself in art while dwelling among poor Dutch peasants—would we have his late efflorescence of troubled and great painting? And if the youthful Young had not initially trained as a physician and become fascinated by the eye and vision, would he have gone on to develop his wave theory of light that revolutionised nineteenth-century physics?

To repeat a crucial comment from Young's 'Autobiographical sketch', written near the end of his life in 1826–1827: 'It is probably best for mankind that the researches of some investigators should be conceived within a narrow compass, while others pass more rapidly through a more extensive sphere of research.[460] Despite the passage of two centuries and the extraordinary advance of knowledge, I think this undramatic but perceptive statement still holds good. The intellectual and creative worlds will always require plenty of specialising professors like Champollion; but they will always benefit from having at least a few disturbing polymaths like Young.

Notes and References

[453] *Lancet*, vol. 369 (10 Feb. 2007): 455–56.

[454] *Physics World*, Mar. 2006: 30–33.

[455] Personal communication from Michael Finnis, Jan. 2023.

[456] Burke: 247.

[457] Kober, 'The Minoan scripts: fact and theory', in Robinson, *The Man Who Deciphered Linear B*: 72.

[458] Letter to Ventris in Robinson, *The Man Who Deciphered Linear B*: 116.

[459] Chadwick: 4.

[460] Quoted in Hilts: 254.