霍金及其遗产

林磊

美国加州圣荷西州立大学物理系
中国科学院物理研究所
中国科协中国科普研究所
蔡元培

北大精神
香港
A brief history of Stephen Hawking

**Personal life**

1942: Born on January 8 in Oxford, England, exactly 300 years after the death of astronomer Galileo

1963: At 21 years old, diagnosed with the degenerative nerve disorder ALS

1965: Marries his first wife, Jane Wilde – the couple had three children

1969: Assumes post of Lucasian Professor of Mathematics, a position formerly held by Isaac Newton

1985: Loses ability to speak and begins using a machine to talk for him

1995: Marries his second wife Elaine Mason

2009: Given highest civilian honor, the Presidential Medal of Freedom

2014: Warns that creating an advanced artificial intelligence might be humanity’s last and deadliest achievement.

**Notable events**

1940: Receives his B.A. in Physics at University of Oxford and begins research in cosmology and general relativity at University of Cambridge

1962: Theorizes that black holes can evaporate through "Hawking radiation"

1970: Publishes "The Large Scale Structure of Space-Time," with George Ellis


1993: Appeared on 'Star Trek' as the only person to ever play himself

2000: Publishes "Black Holes and Baby Universes and Other Essays"

2001: Publishes "The Universe in a Nutshell"

2013: Publishes memoir, "My Brief History"

2018: Dies on March 14 at the age of 76

**Publications**

1973: Publishes his first academic book, "The Large Scale Structure of Space-Time," with George Ellis

1980: "A Brief History of Time" – more than 10 million copies have been sold since then.
学术
<table>
<thead>
<tr>
<th>Year</th>
<th>Age</th>
<th>Event</th>
</tr>
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<tbody>
<tr>
<td>1942</td>
<td>0+</td>
<td>Born</td>
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<td>1960</td>
<td>18</td>
<td>BA, physics, Oxford Univ.</td>
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<tr>
<td>1963</td>
<td>21</td>
<td>Diagnosed with motor neuron disorder ALS</td>
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<tr>
<td>1970</td>
<td>28</td>
<td>Publishes Penrose-Hawking singularity theorems</td>
</tr>
<tr>
<td>1973</td>
<td>31</td>
<td>Publishes “The Large Scale Structure of Space-Time” (with George Ellis)</td>
</tr>
<tr>
<td>1974</td>
<td>32</td>
<td>Publishes Bekenstein-Hawking radiation; starts using wheelchair full-time</td>
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<td>1979</td>
<td>37</td>
<td>Lucasian Professor at Cambridge U.</td>
</tr>
<tr>
<td>1983</td>
<td>41</td>
<td>Publishes Hartle-Hawking State model</td>
</tr>
<tr>
<td>1985</td>
<td>43</td>
<td>Loses ability to speak; uses machine to talk</td>
</tr>
<tr>
<td>1988</td>
<td>46</td>
<td>Publishes “A Brief History of Time”</td>
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<tr>
<td>1994</td>
<td>52</td>
<td>Publishes “Black Holes and Baby Universes and Other Essays”</td>
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<tr>
<td>2013</td>
<td>71</td>
<td>Publishes “My Brief History”</td>
</tr>
<tr>
<td>2018</td>
<td>76</td>
<td>Dies</td>
</tr>
</tbody>
</table>
• 1937 Robert Oppenheimer and Hartland Snyder: General relativity implies existence of black holes

• 1965 Roger Penrose proves mathematically black holes are singularities

• 1970 Hawking and Penrose prove the Big Bang is a singularity

Hawking later, in *A Brief History of Time* (1988), stated that because of quantum mechanics "there was in fact no singularity at the beginning of the universe".

Philip Ball, “These are the discoveries that made Stephen Hawking famous” (bbc.com, Jan. 7, 2016)
Hawking Radiation

The strong gravitational field around a black hole causes pair production.

If a pair is produced outside the event horizon, then one member will fall back into the black hole, but the other member will escape and the black hole loses mass.

The amount of mass lost is greater for small black holes, therefore quantum sized black holes disintegrate in very short timescales.
1972  Jacob Bekenstein assigns entropy to black holes and shows it is finite (thus starts Black Hole Thermodynamics)

1973  Zel’’dovich and Starobinsky tell Hawking in Moscow that rotating black holes create and emit particles (according to quantum mechanics’ Uncertainty Principle)

1974  Hawking argues for radiation’s existence

\[ S_{BH} = \frac{k_B \text{Area} c^3}{4G_N \hbar} \]

“Stephen wanted this equation inscribed on his gravestone.”
(Andrew Strominger, Physics Today 18.03.14)

- \( S_{BH} \) = entropy of black hole (thermodynamics)
- Area = area of black hole
- \( k_B \) = Boltzmann constant (thermodynamics)
- \( c \) = velocity of light
- \( G_N \) = gravitational constant (general relativity)
- \( \hbar \) = Planck constant/2\(\pi\) (quantum mechanics)
1983  Wavefunction of the Universe (with James Hartle)

**No-boundary universe:**

It proposed that before the Big Bang, time did not exist and the concept of the beginning of the universe is meaningless. The initial singularity of the classical Big Bang models was replaced with a region akin to the North Pole. One cannot travel north of the North Pole, but there is no boundary there – it is simply the point where all north-running lines meet and end.
Hawking worked on topics initiated by others, with one exception:

He did initiate the use of both general relativity and quantum theory on black holes (and cosmology)—a patchwork.

- Why others didn’t do that? Because all know that the two are incompatible with each other (and so results obtained could be wrong)

Acknowledged reversals (and lose bets)

<table>
<thead>
<tr>
<th>Year proposed</th>
<th>Proposal</th>
<th>Year reversed</th>
</tr>
</thead>
<tbody>
<tr>
<td>?</td>
<td>About naked singularities (bet with John Preskill)</td>
<td>1997</td>
</tr>
<tr>
<td>2002/2008</td>
<td>Higgs boson would never be found (bet with Peter Higgs)</td>
<td>2012</td>
</tr>
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</table>
The Black Hole War
My Battle with Stephen Hawking to Make the World Safe for Quantum Mechanics

Review by Don Page (Physics Today May 2009)

In 1974 Hawking discovered that black holes are not completely black but instead emit what is now called Hawking radiation. That means that black holes will lose mass and, presumably, eventually evaporate away. But what happens to the information that falls into the black holes?

Not long after his seminal discovery, Hawking proposed that such information is permanently lost from the universe when a black hole disappears.

Only a few were persuaded by my 1980 objection that Hawking’s result depended on the semiclassical approximation of effectively treating the black hole itself classically rather than quantum mechanically.

Hawking held out for 28 years, but, as recounted in the book’s epilogue, in 2004 he made a widely publicized statement in which he agreed that information is preserved.
1982, Alan Guth first met Hawking in Cambridge at Nuffield Workshop on “Very Early Universe”. One month before, Paul Steinhardt and Guth checked Hawking’s calculation and find an error: Hawking underestimated a quantity “by a factor of about $10^4$.” “At Nuffield we had a chance to discuss it briefly with Stephen, but he held rigidly to his calculation.”

When it was Hawking’s turn to talk: “When Stephen reached the part of the calculation that we disagreed with, he inconspicuously did an about-face, presenting the same result that we would have, without any indication that he had ever advocated anything different!” (quotes from Alan Guth, Physics Today 18.03.14)
He is bold and brilliant, but not always rigorous enough to fully persuade, and sometimes seemingly driven by an intuition that can turn out to be quite wrong.

-- Philip Ball (bbc.com 16.01.07)

At Oxford, bored and unchallenged, he joined the University College Boating Club as a coxswain. (He “had a daredevil way of sometimes steering his boat through gaps so narrow that the shell returned to the boathouse with its blades damaged,” a fellow-boatsman recalled.)

-- Alan Burdick (New Yorker 18.03.16)
Lucasian Chair of Mathematics is a mathematics (or theoretical physics) professorship in Cambridge University, founded in 1663 by Henry Lucas.

<table>
<thead>
<tr>
<th>#</th>
<th>Year of appointment</th>
<th>Name</th>
<th>Speciality</th>
<th>Tenure (yr)</th>
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<tbody>
<tr>
<td>1</td>
<td>1663</td>
<td><strong>Isaac Barrow</strong></td>
<td>Classics and mathematics</td>
<td>6</td>
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<tr>
<td></td>
<td></td>
<td>(1630 – 1677)</td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>1669</td>
<td><strong>Isaac Newton</strong></td>
<td>Mathematics and physics</td>
<td>33</td>
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<tr>
<td></td>
<td></td>
<td>(1642 – 1726)</td>
<td></td>
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<tr>
<td>3</td>
<td>1702</td>
<td><strong>William Whiston</strong></td>
<td>Mathematics</td>
<td>9</td>
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<tr>
<td></td>
<td></td>
<td>(1667 – 1752)</td>
<td></td>
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<tr>
<td>14</td>
<td>1903</td>
<td><strong>Joseph Larmor</strong></td>
<td>Physics</td>
<td>29</td>
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<tr>
<td></td>
<td></td>
<td>(1857 – 1942)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>1932</td>
<td><strong>Paul Dirac</strong></td>
<td>Physics</td>
<td>37</td>
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<tr>
<td></td>
<td></td>
<td>(1902 – 1984)</td>
<td></td>
<td></td>
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<tr>
<td>16</td>
<td>1969</td>
<td><strong>James Lighthill</strong></td>
<td>Fluid mechanics</td>
<td>10</td>
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<td></td>
<td></td>
<td>(1924 – 1998)</td>
<td></td>
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<tr>
<td>17</td>
<td>1979</td>
<td><strong>Stephen Hawking</strong></td>
<td>Theoretical physics and cosmology</td>
<td>30</td>
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<td></td>
<td></td>
<td>(1942 – 2018)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>2009</td>
<td><strong>Michael Green</strong></td>
<td>String theory</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(born 1946)</td>
<td></td>
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<tr>
<td>19</td>
<td>2015</td>
<td><strong>Michael Cates</strong></td>
<td>Statistical mechanics of soft condensed matter</td>
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<tr>
<td></td>
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<td>(born 1961)</td>
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<tr>
<td>Year</td>
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<tr>
<td>1904</td>
<td>Lord Rayleigh</td>
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<tr>
<td>1906</td>
<td>Joseph John Thompson</td>
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<tr>
<td>1915</td>
<td>William Henry Bragg &amp; William Lawrence Bragg</td>
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<tr>
<td>1917</td>
<td>Charles Glover Barkla</td>
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<tr>
<td>1927</td>
<td>Charles Thomson Rees Wilson</td>
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<tr>
<td>1928</td>
<td>Owen Williams Richardson</td>
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<tr>
<td>1933</td>
<td>Paul Dirac</td>
<td></td>
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<tr>
<td>1935</td>
<td>James Chadwick</td>
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<tr>
<td>1937</td>
<td>George Paget Thomson</td>
<td></td>
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<tr>
<td>1947</td>
<td>Edward Victor Appleton</td>
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<tr>
<td>1948</td>
<td>Patrick Maynard Stuart Blackett</td>
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<tr>
<td>1950</td>
<td>Cecil Frank Powell</td>
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<tr>
<td>1951</td>
<td>John Douglas Cockcroft</td>
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<tr>
<td>1971</td>
<td>Denis Gabor</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1974</td>
<td>Martin Ryle &amp; Antony Hewish</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1977</td>
<td>Nevill Francis Mott (1905-1996)</td>
<td></td>
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<td></td>
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<tr>
<td>2003</td>
<td>Anthony James Leggett</td>
<td></td>
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<tr>
<td>2009</td>
<td>Charles K. Kao</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2010</td>
<td>Andre Geim &amp; Konstantin Noveselov</td>
<td></td>
<td></td>
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<tr>
<td>2013</td>
<td>Peter Higgs</td>
<td></td>
<td></td>
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<tr>
<td>2016</td>
<td>F. Duncan M. Haldane &amp; John M. Kosterlitz</td>
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Red = theorist

1979 Hawking appointed to Lucasian Chair
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<th>Einstein</th>
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<td></td>
<td></td>
<td>20</td>
<td>BA, physics, Oxford U.</td>
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<td></td>
<td>Academic Diploma at ETH</td>
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<td></td>
<td>BA, Cambridge U.</td>
<td>23-25</td>
<td>Develops Calculus, Laws of Motion, Gravitational Law, Optics</td>
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<td></td>
<td></td>
<td>24</td>
<td>PhD, Cambridge U.</td>
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<tr>
<td></td>
<td>PhD, University of Zurich; 4 breakthrough papers (Brownian motion, Photoelectric Effect, Special Relativity, E = mc²)</td>
<td>26</td>
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<td>Lucasian Professor at Cambridge U.</td>
<td>27</td>
<td>Lucasian Professor at Cambridge U.</td>
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<td></td>
<td></td>
<td>28</td>
<td>Publishes the Penrose-Hawking singularity theorems</td>
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<td>32</td>
<td>Publishes “Bekenstein-Hawking radiation”</td>
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<td>General Relativity</td>
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<td>General Relativity</td>
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<td>Lucasian Professor at Cambridge U.</td>
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<tr>
<td></td>
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<td>41</td>
<td>Publishes the Hartle-Hawking State model</td>
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<td>Nobel Prize</td>
<td>42</td>
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生活
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<td>1963</td>
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<td>Diagnosed with motor neuron disorder ALS</td>
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<td>1965</td>
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<td>1st marriage (Jane Wilde)</td>
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<td>1966</td>
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<td>1967</td>
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<td>First son born</td>
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<td>1970</td>
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<td>Daughter born</td>
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<td>1974</td>
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<td>Starts using wheelchair full-time</td>
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<td>1979</td>
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<td>Second son born; Lucasian Professor at Cambridge U.</td>
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<tr>
<td>1985</td>
<td>43</td>
<td>Loses ability to speak; uses machine to talk</td>
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<tr>
<td>1988</td>
<td>46</td>
<td>Publishes “A Brief History of Time” (becomes rich)</td>
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<tr>
<td>1995</td>
<td>53</td>
<td>1st divorce; 2nd marriage (Elaine Mason)</td>
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<td>2006</td>
<td>64</td>
<td>2nd divorce</td>
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<tr>
<td>2018</td>
<td>76</td>
<td>Dies March 14</td>
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1989 Hire Elaine as nurse
1990 Hawking departs home
1992 Qiu Chengtong visits Hawking 2nd time
Stephen Hawking is a misogynist; and also, quite possibly, a narcissist. You wouldn’t know it from watching *The Theory Of Everything*...[T]he book this film was based on. It is a memoir by Jane Wilde, Hawking’s wife of 30 years, and it is called *Travelling to Infinity* (2007). (‘Infinity’, in this case, means ‘divorce’. ) She wrote an earlier, angrier memoir, *Music to Move the Stars* (1999); but this is now ‘revised’. The collapse of the high profile Hawking marriage, provoked by Stephen's affair with a nurse, is related in honest detail...
Jane knew Hawking might not live long when they married in 1965. The original prognosis was two years. Even so, they made a home, they travelled to conferences abroad, they had three children. She abandoned her scholarly ambitions — the medieval lyric poetry of the Iberian peninsula, if you care, and he didn’t — to support his.

Her sacrifice deserves thanks, but no thanks came; when he became the youngest fellow of the Royal Society at 32, he made a speech, but he did not mention his wife. And why would he? She had become ‘chauffeur, nurse, valet, cup-bearer, and interpreter, as well as companion wife’; that common ghost that haunts university cities — ‘a physics widow’. (Jane notes that Albert Einstein’s first wife, Mileva, named ‘physics’ as the co-respondent in her divorce proceedings.)

The cruellest thing was his refusal to discuss his illness. ‘It was,’ she writes, ‘the very lack of communication that was hardest to bear.’ He insisted on ‘a facade of normality’; yet if he could not acknowledge his own suffering — he ‘never’ talked about the illness — how could he acknowledge hers?

A genius Professor Hawking may be — what do I know of physics? — but he was, if you believe his wife, and I do — a very bad husband indeed.

-- Tanya Gold (spectator.co.uk 15.01.10)
2002年、2006年我两次邀请霍金访华。1978年第一次见到他，那时我在做一个广义相对论的重要工作，解决“卡拉比猜想”的证明，当时广义相对论的学者都不大相信数学家有能力解决这个问题。霍金知道后写信邀我去解释研究，他听了我的思路后认为有可能。我去找他时见他很高兴的样子在笑。聊了八小时后他说请我吃好东西，他就爱吃好东西，但他自己吃得狼狈，因为吞咽不下去。

1992年第二次去剑桥见他时，六个护士轮流照顾他，她们争风吃醋。我请霍金去他喜欢的餐馆吃饭，他吃了不到一刻钟就开着电动轮椅回避着用机器打电话。他太太越坐越不高兴，跑过去吵架。原来霍金在电话里跟护士聊天。他太太眼泪流下来，他还是笑嘻嘻的。

--丘成桐（南方人物周刊 18.03.21）
In 1942 Feynman married his high school sweetheart, Arline Greenbaum despite the knowledge that she was seriously ill with tuberculosis. This was an incurable disease at the time, and she was not expected to live more than two years. After marriage ceremony he took her to Deborah Hospital, where he visited her on weekends.

Feynman was working in the computing room of the Manhattan project at Los Alamos when he was informed that Arline was dying. He borrowed Fuchs' car and drove to Albuquerque where he sat with her for hours until she died on June 16, 1945.
In June 1945 Feynman, aged 27, lost his wife, Arline Feynman, aged 25. Next year, Feynman wrote a letter that was sealed and never opened until his death in 1988.

October 17, 1946

D'Arline,

I adore you, sweetheart.

I know how much you like to hear that — but I don't only write it because you like it — I write it because it makes me warm all over inside to write it to you...I want to tell you I love you. I want to love you. I always will love you.

I find it hard to understand in my mind what it means to love you after you are dead — but I still want to comfort and take care of you — and I want you to love me and care for me... We started to learn to make clothes together — or learn Chinese — or getting a movie projector. Can't I do something now? No. I am alone without you and you were the "idea-woman" and general instigator of all our wild adventures.

When you were sick you worried because you could not give me something that you wanted to and thought I needed. You needn't have worried. Just as I told you then there was no real need because I loved you in so many ways so much... You, dead, are so much better than anyone else alive...

I love my wife. My wife is dead.

Rich.

PS Please excuse my not mailing this — but I don't know your new address.
Elaine Mason married Hawking (1995)

1995  Hawking divorces Jane and marries his nurse of 6 years, Elaine Mason

2006  Divorces Elaine in court

For years there have been shocking rumours of violence and abuse against the vulnerable scientist - mental as well as physical - supported by his own children no less.

In 2000, detectives launched an inquiry after Prof Hawking made a number of visits to Addenbrooke’s Hospital, Cambridge, suffering from cuts and bruises, and another inquiry was opened in 2003 after his daughter Lucy rang police. Prof Hawking declined to explain how his injuries had come about. A number of his former nurses... alleged that over the years his wife inflicted a catalogue of injuries on the vulnerable scientist: fractured his wrist by slamming it on to his wheelchair; humiliated him by refusing him access to a urine bottle, leaving him to wet himself; gashed his cheek with a razor, allowed him to slip beneath the water while in the bath, ensuring water entered the tracheotomy site in his throat; and left him alone in his garden during the hottest day of the year so long that he suffered heatstroke and severe sunburn. (dailymail.co.uk 06.10.20)
He had been known to run his wheelchair over the foot of a student who caused him irritation.

-- Roger Penrose (theguardian.com 18.03.14)
<table>
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<th>Year</th>
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<th>Children’s profession</th>
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<tbody>
<tr>
<td>1965</td>
<td>23</td>
<td>Married Jane Wilde</td>
<td></td>
</tr>
<tr>
<td>1967</td>
<td>25</td>
<td>Timothy (son) born</td>
<td>Software engineer, Microsoft, Seattle</td>
</tr>
<tr>
<td>1970</td>
<td>28</td>
<td>Lucy (daughter) born</td>
<td>Journalist; children book author</td>
</tr>
<tr>
<td>1979</td>
<td>37</td>
<td>Robert (son) born</td>
<td>Account manger; Loyalty executive, LEGO Group</td>
</tr>
</tbody>
</table>

A 2012 movie, based on a true story of a paralyzed student who earns a MA in poetry from UC Berkeley.
Popular books

1. **A Brief History of Time** (1988)
2. **Black Holes and Baby Universes and Other Essays** (1993)
3. **The Universe in a Nutshell** (2001)
5. **God Created the Integers: The Mathematical Breakthroughs That Changed History** (2005)
7. **My Brief History** (2013)

Co-authored

9. **The Large, the Small and the Human Mind** (with Roger Penrose, Abner Shimony and Nancy Cartwright) (1997)

Forewords

Adult books

The Universe in a Nutshell

Review by Chris Impey (Physics Today April 2002)

Thirteen years ago, Stephen Hawking turned the publishing world on its head with *A Brief History of Time*. Written in part to help pay for his round-the-clock nursing care, the book sold more than 10 million copies and has been translated into 35 languages. Despite its phenomenal success, *A Brief History of Time* is an uncompromising book, filled with difficult concepts, uninterrupted by diagrams or pictures, and probably bought by more aunts and uncles (and unread by more nephews and nieces) than any other book in history. Hawking himself has acknowledged that many people probably did not finish or understand it.

Beyond his reputation as a theoretical physicist, Hawking has a second component to his success. *A Brief History of Time* marked his elevation into the public consciousness as an icon of science. Heir to Newton and Einstein, and afflicted by a degenerative disease, *Hawking represents the struggle of a brilliant mind trapped in a wasting body. His personal tragedy sharpens the metaphor of science in which humans transcend their ephemeral status by trying to comprehend a vast and ancient universe.*
Copies printed

10 million

740 million (by 1968)

6000 million
The book’s assertion that physics has all the answers may be especially provocative in a time of growing intolerance toward science, but certainly it is not accurate.

-- Angela V. Olinto (Physics Today Jan. 2011)
Children books

All co-written with his daughter Lucy

1. George's Secret Key to the Universe (2007)

2. George's Cosmic Treasure Hunt (2009)

3. George and the Big Bang (2011)


5. George and the Blue Moon (2016)
Science Popularization Films and Series

1. A Brief History of Time (1992)
5. Masters of Science Fiction (2007)
8. Into the Universe with Stephen Hawking (2010)
9. Brave New World with Stephen Hawking (2011)
Films and series

Stephen Hawking’s Grand Design

Genius by Stephen Hawking

Stem Cell Universe with Stephen Hawking (2014 Documentary)
Giving a speech during the opening ceremony of the 2012 Paralympics in London
Carl Sagan, 1934-1996

- 1972+73 Sagan with Viking lander model; he helps find landing site on Mars
- 1977
- 1980 Cosmos (TV series)
- 1985 Contact (book, movie 1997)
- 1988 A Brief History of Time
- 1982 Advocate SETI
- 1994
- 1996 Aged 62
- 2018 Aged 76

Sagan 54
Hawking 46

Hawking

1980

1997

1988

1994

2018
霍金警告停止天眼计划。他说“如果外星人真的有朝一日到访地球的话，我想结果和哥伦布到达美洲大陆时的情景差不多，那对美洲的土著居民可不是什么好事。”

中国天眼刚刚建立完毕，立马就收到了来自遥远太空的微弱信号，这一消息惊动了霍金。霍金立马发言称，千万不要回应！(2017)
影视
霍金也是巨星
影视歌都没缺席

记者董一菲／综合报导
全球知名物理学家霍金（Stephen Hawking）罹患渐冻症，他不只在学界研究上成就卓著，包括电视、电影甚至音乐界，他也曾留下许多精彩足跡。2014年电影「愛的萬物論」（Theory of Everything）改編他的前半生真實經歷，男主角艾迪瑞德曼（Eddie Redmayne）也因此片獲得金球獎、奧斯卡雙料影帝。2004年電視電影「霍金」（Hawking）中，班尼迪克特康柏拜區（Benedict Cumberbatch）也曾扮演霍金。他曾在訪問中表示：「我有一個兩樣身體，真是太可怕了！」艾迪瑞德曼也在臉書發文悼念這位一代巨人，他表示「非常非常難過霍金離世，這麼聰明的頭腦，這麼年輕就走了...」

「愛的萬物論」改編自霍金第一任妻子潔恩回憶錄，從兩人在1960年代的劍橋大學相遇相愛開始，當時患有運動神經疾病而霍金被診斷只剩兩年生命，但潔恩仍堅持與霍金結婚，並且生下三個孩子。期間霍金出版了「時間簡史」（A Brief History of Time）等著作，知名度越来越高，而病情也愈加嚴重，最後霍金與身患亞斯達克脳（MND）的潔恩，兩人在1995年離婚，霍金開始與另一名物理學家於2005年結婚。

霍金一生多次參與紀錄片，如英國國家廣播公司（BBC）「霍金的宇宙」、甚至霍金本人也多次參與電視演出，90年代他曾在影集「銀河飛鏢」（Star Trek: The Next Generation Season）中扮演自己，後來也在影集「宅男行不行」（The Big Bang Theory）中客串，2005年播出的「辛普森家族」（The Simpsons）中，霍金也以霍金為原型的角色，霍金本人甚至自己擔任配音。

2018年，英國科學頻道播出的「霍金」紀錄片，讓整個紀錄片的編劇正是霍金本人，這是由霍金自己的腦電波機器人製作的自傳，名副其實的「霍金傳」。
Pop Culture

The Big Bang Theory (since 2007)


Futurama: The Beast with a Billion Backs (2008 Animation)

Simpsons (appeared multiple times)
Quantum Is Calling
(2016 Comedy)

London 2012 Paralympic Opening Ceremony
科学偶像
It helps if one studies cosmology (esp. origin of universe—one of 3 big origin questions)

1919
Solar eclipse expt. confirms general relativity

1879-1955
Albert Einstein

1955
Einstein dies

1988
A Brief History of Time

2018
Hawking dies

1942-2018
Stephen Hawking
英国式炒作

1912 英国制定大憲章

“英国特色”皇帝

真皇帝不是皇帝
两个炒作大师的会师
Philip Platzman 1935-2012

- 1956 BS MIT
- 1960 PhD Caltech (Gell-Mann, Feynman)
- 1960-2001 Bell Labs
- 1997 Arthur H. Compton Award
- 2002-2012 Paralyzed from neck down; still goes to Bell Labs office every day; produces 20 papers in last 10 years

Specialty: Condensed matter theory (polaron, x-ray scattering...
身后
陰謀論？霍金已過世33年？

他是傀儡？

「陰謀論」支持者認為，霍金早在33年前就過世了。
（取材自英國獨立報）

霍金去世前的外貌似乎比30多年前年輕，頭髮從棕色變成金黃色，下排牙齒比以前長。

霍金第二段婚姻的結婚照竟出現兩種版本，兩版差異包括妻子梅森（Elaine Mason）的禮服換了，捧花也不一樣：陰謀論者認為，這是造假的開始，為了隱藏霍金的真實相貌。

此外，罹患流感症的霍金喪失言語能力，主要是透過電腦與外界對話，需抽動臉部肌肉，來辨識，而霍金常眯起眼睛，似乎是睡著了，臉頰也沒抽動，但電腦還是繼續讀出他的訊息，「陰謀論」支持者指出，這是NASA天體物理學家事先編好內容，再輸入霍金電腦裡，而輪椅上的傀儡，只要裝出霍金的樣子即可。

「陰謀論」支持者認為，真正的霍金早已在1985年肺炎過世，比他自己的書「時間簡史」還早三年，之後的霍金早已被控制，這足以解釋為何霍金晚年開始預言人類滅亡。

（取材自MailOnline）
Stephen Hawking (1942–2018)

Colleagues remember the leading cosmologist, whose influence expanded beyond the physics community.

Andrew Grant

1. Don Page *(University of Alberta, Hawking’s student)*
2. Marika Taylor *(University of Southampton, Hawking’s student)*
3. John Preskill *(Caltech)*
4. Thomas Hertog *(KU Leuven, Hawking’s student)*
5. George Ellis *(University of Cape Town)*
6. Alan Guth *(MIT)*
7. William Unruh *(University of British Columbia)*
8. Andrew Strominger *(Harvard University)*
Christopher Johnston  August 9, 2017
Everything these scientific people do are mostly THEORY. Meaning it is not proven. It is a thought. I fail to see why these people are so famous without ever proving anything.

jim m  March 14, 2018
These arrogant scientists getting awards for coming up with way out ideas that may or may not be true... and then acting like they’re brilliant for their perhaps never to be proven opinion. I’ve seen how these people come to convenient conclusions based on things no honest person would accept. — Shameful — the people that support this nonsense are just as dishonest and egotistical.

blade  March 15, 2018
The value of a theory without good marketing and devoted followers would not be enough to buy a cup of coffee.

Lisa Gilmer  March 16, 2018
So basically he came up with some interesting ideas, but actually didn’t accomplish anything.
Ashes to be buried in Westminster Abbey

Funeral at Great St. Mary's Church, Cambridge, 18.03.31

新来的谁呀？

听说是姓霍的

The two losers
The fitting resting place
How much money Hawking left behind

How much is Stephen Hawking worth? $20 Million

How did Stephen Hawking earn his money?

- *A Brief History of Time* sold at least 10 million copies
- Cash Prize for Special Fundamental Physics Prize (2012): $3,000,000

https://www.thecinemaholic.com/stephen-hawking-net-worth/ (18.02.13)
科学史与科学传播
And so, a Science History dept. should have contemporary science history, for 2 reasons:

- Preserve historical materials for future science historians
- Recent research experiences/history will help current scientists in promoting innovation

For a dept. in China that focuses on Western science history, one can start a program in preserving the science history of overseas Chinese scientists (which is hard for foreigners to handle without knowing Chinese language and culture). Oral history, manuscripts preserving, books written are all possible methods.

Oral history is one method already used in China for Chinese scientists.
One basic aim of Science Communication (or Kepu) is to propagate the scientific spirit to the public.

The most important part of scientific spirit is to get to the bottom of things (what actually happened).

The existence of science icons is good (if it is genuine).

Should kepu people just accept everything handing down from the scientists and media and passing it to the public? Or, is the kepu community a learned entity capable of independent thinking and judgment?

Plato is my friend,
Aristotle is my friend,
but my greatest friend is truth.

— Isaac Newton
总结
• 霍金的一生绝对是精彩的一生，最大贡献是活下去的意志。

• 有“绝症”，别放弃，可能有奇迹。

• 有强大的宣传，可以把坐轮椅的“一流”科学家炒作到天才。

• 科史人和科普人有责任揭露炒作吗？为什么？

最后：
女博士嫁男物理博士，三思！

听过“物理寡妇”吗？除非...

（男博士娶女物理博士，亦然！）
霍金及其遗产

林磊
美国加州圣何西州立大学物理系

霍金（1942-2018），剑桥大学讲座教授、天体物理学家、影视演员、科普作家。本讲演将就霍金的专业成果和生活作出回顾、分析、评论，说明霍金现象背后的个人、组织、社会因素，提出与科学史和科学传播有关的一些基本问题。炒作是本讲演要讨论的一个中心议题。

林磊，香港大学（一级荣誉）学士、哥伦比亚大学博士、加州圣何西州立大学教授和杰出服务奖获得者。自改革开放始，在中科院物理所工作六年。发明了碗形液晶、活性行走和两个多学科：历史物理学及人科。国际液晶学会创始人和两套英文丛书（《人科》、《偏序系统》）创立人兼主编。发表180多篇论文和出版17本书，包括《艺术》（2011）和《人文学、科学、人科》（2018）。目前研究哲学、文理融合、创新。电邮：lui2002lam@yahoo.com。