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# Run59

from 5/9/2007 to 6/9/2007

Life Tracker



Wednesday, May 09, 2007  
From: "Life Tracker" To: Run59

## test 3 body turing

Alan TuringFrom Wikipedia, the free encyclopediaJump to: navigation, searchAlan TuringBorn June 23, 1912(1912-06-23)London, EnglandDied June 7, 1954 (aged 41)Wilmslow, EnglandOccupation Mathematician, Logician, CryptographerSpouse noneParents Julius Mathison Turing, Ethel Stoney TuringAlan Mathison Turing, OBE (June 23, 1912 – June 7, 1954) was an English mathematician, logician, and cryptographer.Turing is often considered to be the father of modern computer science. Turing provided an influential formalisation of the concept of the algorithm and computation with the Turing machine, formulating the now widely accepted "Turing" version of the Church–Turing thesis, namely that any practical computing model has either the equivalent or a subset of the capabilities of a Turing machine. With the Turing test, he made a significant and characteristically provocative contribution to the debate regarding artificial intelligence: whether it will ever be possible to say that a machine is conscious and can think. He later worked at the National Physical Laboratory, creating one of the first designs for a stored-program computer, although it was never actually built. In 1947 he moved to the University of Manchester to work, largely on software, on the Manchester Mark I, then emerging as one of the world's earliest true computers.During the Second World War Turing worked at Bletchley Park, Britain's codebreaking centre, and was for a time head of Hut 8, the section responsible for German naval cryptanalysis. He devised a number of techniques for breaking German ciphers, including the method of the bombe, an electromechanical machine that could find settings for the Enigma machine.In 1952, Turing was convicted of "acts of gross indecency" after admitting to a sexual relationship with a man in Manchester. He was placed on probation and required to undergo hormone therapy. Turing died after eating an apple laced with cyanide in 1954. His death was ruled as suicide.Contents[hide] \* 1 Childhood and youth \* 2 University and his work on computability \* 3 Cryptanalysis o 3.1 The Turing-Welchman bombe o 3.2 Hut 8 and Naval Enigma \* 4 Early computers and the Turing Test \* 5 Pattern formation and mathematical biology \* 6 Prosecution for homosexual acts and Turing's death \* 7 Posthumous recognition \* 8 Further reading \* 9 Turing in fiction \* 10 See also \* 11 References \* 12 External links o 12.1 Papers[edit] Childhood and youthTuring was conceived in 1911 in Chatrapur, Orissa India. His father, Julius Mathison Turing, was a member of the Indian civil service. Julius and wife Sara (née Stoney; 1881–1976, daughter of Edward Waller Stoney, chief engineer of the Madras Railways) wanted Alan to be brought up in England, so they returned to Maida Vale, [1] London, where Alan Turing was born June 23, 1912, as recorded by a blue plaque on the outside of the building, now the Colonnade Hotel.[2][3] He had an elder brother, John. His father's civil service commission was still active, and during Turing's childhood years his parents travelled between Guildford, England and India, leaving their two sons to stay with friends in England, rather than risk their health in the British colony. Very early in life, Turing showed signs of the genius he was to display more prominently later.[citation needed]His parents enrolled him at St Michael's, a day school, at the age of six. The headmistress recognised his genius early on, as did many of his subsequent educators. In 1926, at the age of 14, he went on to Sherborne School in Dorset. His first day of term coincided with a general strike in England, and so determined was he to attend his first day that he rode his bike unaccompanied more than 60 miles from Southampton to school, stopping overnight at an inn—a feat reported in the local press.Turing's natural inclination toward mathematics and science did not earn him respect with the teachers at Sherborne, a famous and expensive public school, whose definition of education placed more emphasis on the classics. His headmaster wrote to his parents: "I hope he will not fall between two schools. If he is to stay at public school, he must aim at becoming educated. If he is to be solely a Scientific

Specialist, he is wasting his time at a public school".[4]Despite this, Turing continued to show remarkable ability in the studies he loved, solving advanced problems in 1927 without having even studied elementary calculus. In 1928, aged 16, Turing encountered Albert Einstein's work; not only did he grasp it, but he extrapolated Einstein's questioning of Newton's laws of motion from a text in which this was never made explicit. The computer room at King's is now named after Turing, who became a student there in 1931 and a Fellow in 1935. The computer room at King's is now named after Turing, who became a student there in 1931 and a Fellow in 1935. Turing's hopes and ambitions at school were raised by his strong feelings for his friend Christopher Morcom, with whom he fell in love, though the feeling was not reciprocated. Morcom died suddenly only a few weeks into their last term at Sherborne, from complications of bovine tuberculosis, contracted after drinking infected cow's milk as a boy.[edit] University and his work on computability Turing's unwillingness to work as hard on his classical studies as on science and mathematics meant he failed to win a scholarship to Trinity College, Cambridge, and went on to the college of his second choice, King's College, Cambridge. He was an undergraduate from 1931 to 1934, graduating with a distinguished degree, and in 1935 was elected a fellow at King's on the strength of a dissertation on the Gaussian error function. Alan Turing, on the steps of the bus, with members of the Walton Athletic Club, 1946. Alan Turing, on the steps of the bus, with members of the Walton Athletic Club, 1946. In his momentous paper "On Computable Numbers, with an Application to the Entscheidungsproblem" (submitted on May 28, 1936), Turing reformulated Kurt Gödel's 1931 results on the limits of proof and computation, substituting Gödel's universal arithmetic-based formal language by what are now called Turing machines, formal and simple devices. He proved that such a machine would be capable of performing any conceivable mathematical problem if it were representable as an algorithm, even if no actual Turing machine would be likely to have practical applications, being much slower than alternatives. Turing machines are to this day the central object of study in theory of computation. He went on to prove that there was no solution to the Entscheidungsproblem by first showing that the halting problem for Turing machines is undecidable: it is not possible to decide algorithmically whether a given Turing machine will ever halt. While his proof was published subsequent to Alonzo Church's equivalent proof in respect to his lambda calculus, Turing's work is considerably more accessible and intuitive. It was also novel in its notion of a "Universal (Turing) Machine", the idea that such a machine could perform the tasks of any other machine. The paper also introduces the notion of definable numbers. Most of 1937 and 1938 he spent at Princeton University, studying under Alonzo Church. In 1938 he obtained his Ph.D. from Princeton; his dissertation introduced the notion of relative computing where Turing machines are augmented with so-called oracles, allowing a study of problems that cannot be solved by a Turing machine. Back in Cambridge in 1939, he attended lectures by Ludwig Wittgenstein about the foundations of mathematics. [5] The two argued and disagreed, with Turing defending formalism and Wittgenstein arguing that mathematics is overvalued and does not discover any absolute truths. [6][edit] Cryptanalysis Two cottages in the stable yard at Bletchley Park. Turing worked here from 1939–1940 until he moved to Hut 8. Two cottages in the stable yard at Bletchley Park. Turing worked here from 1939–1940 until he moved to Hut 8. During the Second World War, Turing was a main participant in the efforts at Bletchley Park to break German ciphers. Building on cryptanalysis work carried out in Poland before the war, he contributed several insights into breaking both the Enigma machine and the Lorenz SZ 40/42 (a teletype cipher attachment codenamed "Tunny" by the British), and was, for a time, head of Hut 8, the section responsible for reading German naval signals. Since September 1938, Turing had been working part-time for the Government Code and Cypher School (GCCS), the British codebreaking organisation. He worked on the problem of the German Enigma machine, and collaborated with Dilly Knox, a senior GCCS codebreaker. [7] On 4 September 1939, the day after Britain declared war on Germany, Turing reported to Bletchley Park, the wartime station of GCCS. [8] Replica of a bombe machine Replica of a bombe machine [edit] The Turing-Welchman bombe Within weeks of arriving at Bletchley Park, [8] Turing had devised an

electromechanical machine which could help break Enigma: the bombe, named after the Polish-designed bomba. The bombe, with an enhancement suggested by mathematician Gordon Welchman, became the primary tool used to read Enigma traffic. The bombe searched for the correct settings of the Enigma rotors, and required a suitable "crib": a piece of matching plaintext and ciphertext. For each possible setting of the rotors, the bombe performed a chain of logical deductions based on the crib, implemented electrically. The bombe detected when a contradiction had occurred, and ruled out that setting, moving onto the next. Most of the possible settings would cause contradictions and be discarded, leaving only a few to be investigated in detail. Turing's bombe was first installed on 18 March 1940. [9] Over 200 bombes were in operation by the end of the war.[citation needed][edit] Hut 8 and Naval Enigma In December 1940, Turing solved the naval Enigma indicator system, which was more complex than the indicator systems used by the other services. Turing also invented a Bayesian statistical technique termed "Banburismus" to assist in breaking Naval Enigma. Banburismus could rule out certain orders of the Enigma rotors, reducing time needed to test settings on the bombes. In the spring of 1941, Turing proposed marriage to Hut 8 co-worker Joan Clarke, although the engagement was broken off by mutual agreement in the summer. In July 1942, Turing devised a technique termed Turingismus or Turingery for use against the "Fish" Lorenz cipher. He also introduced the Fish team to Tommy Flowers, who went on to design the Colossus computer.[10] A frequent misconception is that Turing was a key figure in the design of Colossus; this was not the case.[11] Turing travelled to the United States in November 1942 and worked with US Navy cryptanalysts on Naval Enigma and bombe construction in Washington, and assisted at Bell Labs with the development of secure speech devices. He returned to Bletchley Park in March 1943. During his absence, Hugh Alexander had officially assumed the position of head of Hut 8, although Alexander had been de facto head for some time—Turing having little interest in the day-to-day running of the section. Turing became a general consultant for cryptanalysis at Bletchley Park. In the latter part of the war, teaching himself electronics at the same time, Turing undertook (assisted by engineer Donald Bayley) the design of a portable machine codenamed Delilah to allow secure voice communications. Intended for different applications, Delilah lacked capability for use with long-distance radio transmissions, and was completed too late to be used in the war. Though Turing demonstrated it to officials by encrypting/decrypting a recording of a Winston Churchill speech, Delilah was not adopted for use. In 1945, Turing was awarded the OBE for his wartime services, but his work remained secret for many years. A biography published by the Royal Society shortly after his death recorded: "Three remarkable papers written just before the war, on three diverse mathematical subjects, show the quality of the work that might have been produced if he had settled down to work on some big problem at that critical time. For his work at the Foreign Office he was awarded the OBE." [12][edit] Early computers and the Turing Test Turing achieved world-class marathon standards of his era. His best time of 2 hours, 46 minutes, 3 seconds, was only 11 minutes slower than the winner in the 1948 Olympic Games. Turing achieved world-class marathon standards of his era. His best time of 2 hours, 46 minutes, 3 seconds, was only 11 minutes slower than the winner in the 1948 Olympic Games.[13][14][15] From 1945 to 1947 he was at the National Physical Laboratory, where he worked on the design of the ACE (Automatic Computing Engine). He presented a paper on February 19, 1946, which was the first complete design of a stored-program computer in Britain. Although he succeeded in designing the ACE, there were delays in starting the project and he became disillusioned. In late 1947 he returned to Cambridge for a sabbatical year. While he was at Cambridge, ACE was completed in his absence and executed its first program on May 10, 1950. In 1948 he was appointed Reader in the Mathematics Department at Manchester and in 1949 became deputy director of the computing laboratory at the University of Manchester, and worked on software for one of the earliest true computers—the Manchester Mark I. During this time he continued to do more abstract work, and in "Computing machinery and intelligence" (Mind, October 1950), Turing addressed the problem of artificial intelligence, and proposed an experiment now known as the Turing test, an attempt to define a standard for a machine to be called "sentient". In 1948,

Turing, working with his former undergraduate colleague, D.G. Champernowne, began writing a chess program for a computer that did not yet exist. In 1952, lacking a computer powerful enough to execute the program, Turing played a game in which he simulated the computer, taking about half an hour per move. The game was recorded; the program lost to Turing's colleague Alick Glennie, although it is said that it won a game against Champernowne's wife.

[edit] Pattern formation and mathematical biology Turing worked from 1952 until his death in 1954 on mathematical biology, specifically morphogenesis. He published one paper on the subject called "The Chemical Basis of Morphogenesis" in 1952, putting forth the Turing hypothesis of pattern formation.[1] His central interest in the field was understanding Fibonacci phyllotaxis, the existence of Fibonacci numbers in plant structures. He used reaction-diffusion equations which are now central to the field of pattern formation. Later papers went unpublished until 1992 when *Collected Works of A.M. Turing* was published.

[edit] Prosecution for homosexual acts and Turing's death Turing was a homosexual[2] during a period when homosexual acts were illegal in England and homosexuality was regarded as a mental illness. In 1952, Arnold Murray, a 19-year-old recent acquaintance of his[16] helped an accomplice to break into Turing's house, and Turing went to the police to report the crime. As a result of the police investigation, Turing acknowledged a sexual relationship with Murray, and they were charged with gross indecency under Section 11 of the Criminal Law Amendment Act of 1885. Turing was unrepentant and was convicted. He was given the choice between imprisonment and probation, conditional on him undergoing hormonal treatment designed to reduce libido. In order to avoid going to jail, he accepted the oestrogen hormone injections, which lasted for a year, with side effects including the development of breasts. His conviction led to a removal of his security clearance and prevented him from continuing consultancy for GCHQ on cryptographic matters. On June 8, 1954, his cleaner found his lifeless body; the previous day, he had died of cyanide poisoning, apparently from a cyanide-laced apple he left half-eaten beside his bed. The apple itself was never tested for contamination with cyanide, and cyanide poisoning as a cause of death was established by a post-mortem. Most believe that his death was intentional, and the death was ruled a suicide. His mother, however, strenuously argued that the ingestion was accidental due to his careless storage of laboratory chemicals. Biographer Andrew Hodges suggests that Turing may have killed himself in this ambiguous way quite deliberately, to give his mother some plausible deniability.[17] Because Turing's homosexuality would have been perceived as a security risk, the possibility of assassination has also been suggested.[18] His remains were cremated at Woking crematorium on June 12, 1954.

[edit] Posthumous recognition Since 1966, the Turing Award has been given annually by the Association for Computing Machinery to a person for technical contributions to the computing community. It is widely considered to be the computing world's equivalent to the Nobel Prize. Various tributes to Turing have been made in Manchester, the city where he worked towards the end of his life. In 1994 a stretch of the Manchester city inner ring road was named Alan Turing Way. Alan Turing memorial statue in Sackville Park Alan Turing memorial statue in Sackville Park A statue of Turing was unveiled in Manchester on June 23, 2001. It is in Sackville Park, between the University of Manchester building on Whitworth Street and the Canal Street 'gay village'. A celebration of Turing's life and achievements arranged by the British Logic Colloquium and the British Society for the History of Mathematics was held on 5 June 2004 at the University of Manchester and the Alan Turing Institute was initiated in the university that summer. On 23 June 1998, on what would have been Turing's 86th birthday, Andrew Hodges, his biographer, unveiled an official English Heritage Blue Plaque on his childhood home in Warrington Crescent, London, now the Colonnade hotel.[19][20] To mark the 50th anniversary of his death, a memorial plaque was unveiled on June 7, 2004 at his former residence, Hollymeade, in Wilmslow. Plaque marking Turing's home Plaque marking Turing's home For his achievements in computing, various universities have honoured him. On October 28, 2004 a bronze statue of Alan Turing sculpted by John W Mills was unveiled at the University of Surrey.[21] The statue marks the 50th anniversary of Turing's death. It portrays Turing carrying his books across the campus. The Polytechnic University of Puerto Rico and Los Andes University of Bogotá, Colombia, both



have computer laboratories named after Turing. The University of Texas at Austin has an honours computer science program named the Turing Scholars. Istanbul Bilgi University organizes an annual conference on the theory of computation called Turing Days.[22] Carnegie Mellon University has a granite bench, situated in The Hornbostel Mall, with the name "Alan Turing" carved across the top, "Read" down the left leg, and "Write" down the other. The Boston GLBT pride organization named Turing their 2006 Honorary Grand Marshal. [23] The Bishop Cotton Boys School's annual Information Technology competition and festival is known as the Alan Turing Memorial Festival.[citation needed][edit] Further reading

- \* Agar, Jon (2002). *The Government Machine*. Cambridge, Massachusetts: The MIT Press. ISBN: 0262012022
- \* Beniger, James (1986). *The Control Revolution: Technological and Economic Origins of the Information Society*. Cambridge, Massachusetts: Harvard University Press. ISBN: 0674169867
- \* Bodanis, David (2005). *Electric Universe: How Electricity Switched on the Modern World*. New York: Three Rivers Press. ISBN 0-307-33598-4.
- \* Campbell-Kelly, Martin (ed.) (1994). *Passages in the Life of a Philosopher*. London: William Pickering. ISBN: 0813520665
- \* Campbell-Kelly, Martin, and Aspray, William (1996). *Computer: A History of the Information Machine*. New York: Basic Books. ISBN: 0-465-02989-2
- \* Ceruzzi, Paul (1998). *A History of Modern Computing*. Cambridge, Massachusetts, and London: MIT Press. ISBN: 0-262-53169-0
- \* Chandler, Alfred (1977). *The Visible Hand: The Managerial Revolution in American Business*. Cambridge, Massachusetts: Belknap Press. ISBN: 0674940520
- \* Copeland, B. Jack (2004). "Colossus: Its Origins and Originators". *IEEE Annals of the History of Computing* 26 (4): 38–45.
- \* Copeland, B. Jack (ed.) (2004). *The Essential Turing*. Oxford: Oxford University Press. ISBN 0-19-825079-7.
- \* Copeland (ed.), B. Jack (2005). *Alan Turing's Automatic Computing Engine*. Oxford: Oxford University Press. ISBN 0-19-856593-3.
- \* Edwards, Paul N (1996). *The Closed World*. Cambridge, Massachusetts: MIT Press. ISBN: 0262550288
- \* Hodges, Andrew (1983). *Alan Turing: The Enigma of Intelligence*. London: Burnett Books. ISBN: 0045100608
- \* Lubar, Steven (1993) *Infoculture*. Boston and New York: Houghton Mifflin. ISBN: 039557045
- \* O'Connor, John J.; Edmund F. Robertson "Alan Mathison Turing". *MacTutor History of Mathematics archive*.
- \* Smith, Roger (1997). *Fontana History of the Human Sciences*. London: Fontana.
- \* Teuscher, Christof (ed.) (2004). *Alan Turing: Life and Legacy of a Great Thinker*. Springer-Verlag. ISBN 3-540-20020-7.
- \* Weizenbaum, Joseph (1976). *Computer Power and Human Reason*. London: Freeman. ISBN: 0716704633
- \* Williams, Michael R. (1985). *A History of Computing Technology*. Englewood Cliffs, New Jersey: Prentice-Hall. ISBN: 0-8186-7739-2
- \* Whitmore, Hugh (1987). *Breaking the Code*, Oxford: Amber Lane Press. ASIN: B000B7TM0Q
- \* Yates, David M. (1997). *Turing's Legacy: A history of computing at the National Physical Laboratory 1945–1995*. London: London Science Museum. ISBN 0-901805-94-7.

\* Turing's mother, Sara Turing, who survived him by many years, wrote a biography of her son glorifying his life. Published in 1959, it could not cover his war work; scarcely 300 copies were sold.[24] The six-page foreword by Lyn Irvine includes reminiscences and is more frequently quoted.

- \* The play *Breaking the Code* by Hugh Whitmore is about the life and death of Turing. In the original West End and Broadway runs, the role of Turing was played by Derek Jacobi, who also played Turing in a 1996 television adaptation of the play.[edit] Turing in fiction
- \* Physicist Janna Levin's novel *A Madman Dreams of Turing Machines* focuses on the lives of both Alan Turing and Kurt Gödel.
- \* Turing appears as a character in Neal Stephenson's *Cryptonomicon*.
- \* A young Alan Turing introduces the title character to Gödel's first incompleteness theorem in Apostolos Doxiadis's novel *Uncle Petros and Goldbach's Conjecture*.
- \* In the 1989 Doctor Who serial *The Curse of Fenric*, the character of Dr Judson is based on Turing. Turing himself is a narrator of the Doctor Who spin-off novel *The Turing Test* by Paul Leonard. An Alan Turing from a parallel universe appears in the later novel *The Domino Effect* by David Bishop
- \* Greg Egan's novella, *Oracle*, is about an alternate universe version of Turing
- \* In John Banville's *The Untouchable*, the character Alastair Sykes is modeled on Alan Turing.
- \* In William Gibson's seminal cyberpunk novel *Neuromancer*, the sinister body tasked with the regulation and suppression of artificial intelligences is called the "Turing Registry", and its agents are referred to as the

"Turing Police". \* In 1987 German author and playwright Rolf Hochhuth published the novel Alan Turing after reading the biography written by Turing's mother. \* The 2007 Charlie Higson children's novel Double or Die features Turing as a minor character. \* In the 1995 Legend Entertainment PC game Mission Critical, the computer cores in which the Turing-test verified shipboard artificial intelligence reside are called Turing Cores.[edit] See also \* Alan Turing's Unorganized Machines \* Good-Turing frequency estimation \* List of gay, lesbian or bisexual people \* Philosophy of information[edit] References 1. ^ London Blue Plaques. English-Heritage.org.uk. Retrieved on 2007-02-10. 2. ^ a b Hodges, Andrew (1983). Alan Turing: The Enigma. New York: Simon & Schuster, pp. 5. ISBN 0-671-49207-1. 3. ^ The Alan Turing Internet Scrapbook. Retrieved on 2006-09-26. 4. ^ Hodges, 1983, p. 26 5. ^ Hodges, 1983, p. 152 6. ^ Hodges, 1983, pp. 153-154 7. ^ Jack Copeland, "Colossus and the Dawning of the Computer Age", p. 352 in Action This Day, 2001 8. ^ a b Copeland (ed.), B. Jack (2006). Colossus: The Secrets of Bletchley Park's Codebreaking Computers. New York: Oxford University Press, p. 378. ISBN 019284055X. 9. ^ Hodges, 1983, p. 191 10. ^ Copeland, 2006, pp. 72 11. ^ Copeland, 2006, pp. 382-383 12. ^ Newman, M. H. A. (1955). Alan Mathison Turing, Biographical Memoirs of Fellows of the Royal Society, 1955, Volume 1. The Royal Society. 13. ^ Sherriff, Lucy (2004-10-29). "Turing honoured with bronze statue". The Register. Retrieved on 2007-02-10. 14. ^ "Alan Turing Scrapbook". Retrieved on 2007-02-10. 15. ^ "Athletics: Marathon and Decathlon Championships", The Times, 1947-08-25. 16. ^ cf. Hodges, pp.449-455 17. ^ Hodges, 1983, pp. 488-489 18. ^ Leavitt, David (2006). The man who knew too much: Alan Turing and the invention of the computer. New York: W. W. Norton. ISBN 0393052362. 19. ^ Unveiling the official Blue Plaque on Alan Turing's Birthplace. Retrieved on 2006-09-26. 20. ^ About this Plaque - Alan Turing. Retrieved on 2006-09-25. 21. ^ The Earl of Wessex unveils statue of Alan Turing. Retrieved on 2007-02-10. 22. ^ Turing Days @ Istanbul Bilgi University. Retrieved on 2007-02-10. 23. ^ Honorary Grand Marshal. Retrieved on 2007-02-10. 24. ^ Sara Turing to Lyn Newman, 1967, Library of St John's College, Cambridge.[edit] External links The external links in this article may require cleanup to comply with Wikipedia's content policies. Please improve this article by removing excessive or inappropriate external links. Please remove this tag when this is done. This article has been tagged since September 2006. (talk)Wikiquote has a collection of quotations related to:Alan TuringWikimedia Commons has media related to:Alan Turing \* O'Connor, John J.; Edmund F. Robertson "Alan Turing". MacTutor History of Mathematics archive. \* Alan Turing site maintained by Andrew Hodges including a short biography \* AlanTuring.net Turing Archive for the History of Computing by Jack Copeland \* The Turing Archive - contains scans of some unpublished documents and material from the Kings College archive \* Alan Turing —Towards a Digital Mind: Part 1 \* Time 100:Alan Turing \* Stanford Encyclopedia of Philosophy entry \* Hollymeade unveiling of memorial plaque marking 50th anniversary of Turing's untimely death \* Alan Turing and morphogenesis \* Photos \* More photos \* Morton, Paul Econoculture Interview with David Leavitt about The Man Who Knew Too Much: Alan Turing and the Invention of the Computer February 2 2006[edit] Papers \* "Computing machinery and intelligence" \* Turing's paper titled "On Computable Numbers with an Application to the Entscheidungsproblem" (PDF)PersondataNAME Turing, Alan MathisonALTERNATIVE NAMES SHORT DESCRIPTION Computer scientist, mathematician, and cryptographerDATE OF BIRTH June 23, 1912PLACE OF BIRTH Paddington, London, EnglandDATE OF DEATH June 7, 1954PLACE OF DEATH Manchester, EnglandRetrieved from "http://en.wikipedia.org/wiki/Alan\_Turing"Categories: Articles with unsourced statements since April 2007 | All articles with unsourced statements | Articles with unsourced statements since February 2007 | Wikipedia external links cleanup | 1912 births | 1954 deaths | 20th century mathematicians | 20th century philosophers | Academics of the University of Manchester | Alan Turing | Alumni of King's College, Cambridge | Artificial intelligence researchers | British computer scientists | British cryptographers | British people of World War II | Cause of death disputed | Computer designers | Computer pioneers | English atheists | English computer scientists | English inventors | English mathematicians | English philosophers | Erdős number 5 | Fellows of the Royal Society | Formal methods

people | LGBT academics | LGBT history of the United Kingdom | LGBT people from England | Long-distance runners | Mathematicians who committed suicide | Members of the Order of the British Empire | Old Shirburnians | People associated with Bletchley Park | People prosecuted under anti-homosexuality laws | Philosophers of mind | Princeton University alumni | Scientists who committed suicide | Suicides by poisonViews

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Wednesday, May 09, 2007  
From: "Life Tracker" To: Run59

### test 4 turing test + pics

The Turing Test is a proposal for a test of a machine's capability to demonstrate thought. Described by Professor Alan Turing in the 1950 paper 'Computing machinery and intelligence,' it proceeds as follows: a human judge engages in a natural language conversation with two other parties, one a human and the other a machine; if the judge cannot reliably tell which is which, then the machine is said to pass the test. It is assumed that both the human and the machine try to appear human. In order to keep the test setting simple and universal (to explicitly test the linguistic capability of the machine instead of its ability to render words into audio), the conversation is usually limited to a text-only channel such as a teletype machine as Turing suggested or, more recently, IRC or instant messaging.

Contents [hide] \* 1 History \* 2 Objections and replies \* 3 Discussion of relevance \* 4 Predictions and tests \* 5 Terminology \* 6 Variations of the Turing test \* 7 References \* 8 See also \* 9 External links[edit] HistoryThe test was inspired by a party game known as the 'Imitation Game', in which a man and a woman go into separate rooms, and guests try to tell them apart by writing a series of questions and reading the typewritten answers sent back. In this game, both the man and the woman aim to convince the guests that they are the other. Turing proposed a test employing the imitation game as follows: 'We now ask the question, 'What will happen when a machine takes the part of A in this game?' Will the interrogator decide wrongly as often when the game is played like this as he does when the game is played between a man and a woman? These questions replace our original, 'Can machines think?' (Turing 1950) Later in the paper he suggested an 'equivalent' alternative formulation involving a judge conversing only with a computer and a man. Turing originally proposed the test in order to replace the emotionally charged and (for him) meaningless question 'Can machines think?' with a more well-defined one. The advantage of the new question, he said, was that it 'drew a fairly sharp line between the physical and intellectual capacities of a man.'

[edit] Objections and repliesTuring himself suggested several objections which could be made to the test. Below are some of the objections and replies from the article in which Turing first proposed the test.

1. "Heads in the Sand" Objection: 'The consequences of machines thinking would be too dreadful. Let us hope and believe that they cannot do so.'

This objection is a fallacious appeal to consequences, confusing what should not be with what can or cannot be.

2. Mathematical Objections: This objection uses mathematical theorems, such as Gödel's incompleteness theorem, to show that there are limits to what questions a computer system based on logic can answer. Turing suggests that humans are too often wrong themselves and pleased at the fallibility of a machine.
3. Mechanical Objections: A sufficiently fast machine with sufficiently large memory could be programmed

with a large enough number of human questions and human responses to deliver a human answer to almost every question, and a vague random answer to the few questions not in its memory. This would simulate human response in a purely mechanical way. Psychologists have observed that most humans have a limited number of verbal responses.

4. Data Processing Objection: Machines process data bit by bit. Humans process data holistically. In this view, even if a machine appears human in every way, to treat it as human is to indulge in anthropomorphic thinking (recent advances in parallel computing and fuzzy logic based systems raise interesting questions regarding this specific objection).

5. Argument From Consciousness: This argument, suggested by Professor Geoffrey Jefferson in his 1949 Lister Oration, entitled, 'The Mind of Mechanical Man,' states that 'not until a machine can write a sonnet or compose a concerto because of thoughts and emotions felt, and not by the chance fall of symbols, could we agree that machine equals brain.' Turing replies by saying that we have no way of knowing that any individual other than ourselves experiences emotions, and that therefore we should accept the test. Also, few people actually can write a sonnet or compose a concerto.

6. Theological Objection: This states that thinking is a function of man's immortal soul and therefore a machine could not think. Turing replies by saying that he sees no reason why it would not be possible for God to grant a computer a soul if He so wished.

7. Lady Lovelace Objection: One of the most famous objections, states that computers are incapable of originality. This is largely because, according to Ada Lovelace, machines are incapable of independent learning. Turing contradicts this by arguing that Lady Lovelace's assumption was affected by the context from which she wrote, and if exposed to more contemporary scientific knowledge, it would become evident that the brain's storage is quite similar to that of a computer. Turing further replies that computers could still surprise humans, in particular where the consequences of different facts are not immediately recognizable.

8. Informality of Behaviour: This argument states that any system governed by laws will be predictable and therefore not truly intelligent. Turing replies by stating that this is confusing laws of behaviour with general rules of conduct, and that if on a broad enough scale (such as is evident in man) machine behaviour would become increasingly difficult to predict. (Later research on recursive algorithms has found that, in any case, deterministic systems are capable of a chaotic diversity of behaviour.)[citation needed]

9. Extra-sensory perception: Turing seems to suggest that there is evidence for extra-sensory perception. However, he feels that conditions could be created in which this would not affect the test and so may be disregarded.

[edit] Discussion of relevance

There has been some controversy over which of the alternate formulations of the test Turing intended. (Moor, 2003) The term 'Turing Test' is usually taken to indicate a test in which a human judge converses with a human and a computer without knowing which is which. It has been argued that the Turing test is so defined that it cannot serve as a valid definition of machine intelligence or 'machine thinking' for at least three reasons:

1. A machine passing the Turing test may be able to simulate human conversational behaviour, but this may be much weaker than true intelligence. The machine might just follow some cleverly devised rules. A common rebuttal in the AI community has been to ask, 'How do we know humans don't just follow some cleverly devised rules?'
- Two famous examples of this line of argument against the Turing test are John Searle's Chinese room argument and Ned Block's Blockhead argument.
2. A machine may very well be intelligent without being able to chat like a human.
3. Many humans that we'd probably want to consider intelligent might fail this test (e.g., the young or the illiterate). On the other hand, the intelligence of fellow humans is almost always tested exclusively based on their speech.

Another potential problem, related to the first objection above, is that even if the Turing test is a good operational definition of intelligence, it may not indicate that the machine has consciousness, or that it has intentionality. Perhaps intelligence and consciousness, for example, are such that neither one necessarily implies the other. In that case, the Turing test might fail to capture one of the key differences between intelligent machines and intelligent people. Of course, machines passing the test would most likely vehemently disagree. In the words of science popularizer Larry Gonick, 'I personally disagree with this criterion, on the grounds that a simulation is not the real thing.' These criticisms are directed to the Turing Test

so defined, but other interpretations of Turing's 'new question' have been discussed. Sterret argues that two distinct tests can be extracted from Turing's 1950 paper, and that, pace Turing's remark, they are not equivalent. The test that employs the party game and compares frequencies of success in the game is referred to as the 'Original Imitation Game Test' whereas the test consisting of a human judge conversing with a human and a machine is referred to as the 'Standard Turing Test'. Sterrett agrees that the Standard Turing Test (STT) has the problems its critics cite, but argues that, in contrast, the Original Imitation Game Test (OIG Test) so defined is immune to many of them, due to a crucial difference: the OIG Test, unlike the STT, does not make similarity to a human performance the criterion of the test, even though it employs a human performance in setting a criterion for machine intelligence. A man can fail the OIG Test, but it is argued that this is a virtue of a test of intelligence if failure indicates a lack of resourcefulness. It is argued that the OIG Test requires the resourcefulness associated with intelligence and not merely 'simulation of human conversational behaviour'. The general structure of the OIG Test could even be used with nonverbal versions of imitation games (Sterrett 2000). Still other writers (Genova (1994), Hayes and Ford (1995), Heil (1998), Dreyfus (1979)) have interpreted Turing to be proposing that the imitation game itself is the test, without specifying how to take into account Turing's statement that the test he proposed using the party version of the imitation game is based upon a criterion of comparative frequency of success in that imitation game, rather than a capacity to succeed at one round of the game. [edit] Predictions and tests Turing predicted that machines would eventually be able to pass the test. In fact, he estimated that by the year 2000, machines with 109 bits (about 119 MiB) of memory would be able to fool 30% of human judges during a 5-minute test. He also predicted that people would then no longer consider the phrase 'thinking machine' contradictory. He further predicted that machine learning would be an important part of building powerful machines, a claim which is considered to be plausible by contemporary researchers in Artificial intelligence. By extrapolating an exponential growth of technology over several decades, futurist Ray Kurzweil predicted that Turing-capable computers would be manufactured around the year 2020, roughly speaking. See the Moore's Law article and the references therein for discussions of the plausibility of this argument. As of 2007, no computer has passed the Turing test as such. Simple conversational programs such as ELIZA have fooled people into believing they are talking to another human being, such as in an informal experiment termed AOLiza. However, such 'successes' are not the same as a Turing Test. Most obviously, the human party in the conversation has no reason to suspect they are talking to anything other than a human, whereas in a real Turing test the questioner is actively trying to determine the nature of the entity they are chatting with. Documented cases are usually in environments such as Internet Relay Chat where conversation is sometimes stilted and meaningless, and in which no understanding of a conversation is necessary. Additionally, many internet relay chat participants use English as a second or third language, thus making it even more likely that they would assume that an unintelligent comment by the conversational program is simply something they have misunderstood, and are also probably unfamiliar with the technology of 'chat bots' and don't recognize the very non-human errors they make. See ELIZA effect. The Loebner prize is an annual competition to determine the best Turing test competitors. Although they award an annual prize for the computer system that, in the judges' opinions, demonstrates the 'most human' conversational behaviour (with learning AI Jabberwacky winning in the last two years, and A.L.I.C.E. before that), they have an additional prize for a system that in their opinion passes a Turing test. This second prize has not yet been awarded. The creators of Jabberwacky have proposed a personal Turing Test: the ability to pass the imitation test while attempting to specifically imitate the human player, with whom the AI will have conversed at length before the test. [1]. Trying to pass the Turing test in its full generality is not, as of 2005, an active focus of much mainstream academic or commercial effort. Current research in AI-related fields is aimed at more modest and specific goals. There is an ongoing \$10,000 bet at the Long Bet Project between Mitch Kapor and Ray Kurzweil about the question whether a computer will pass a Turing Test by the year 2029. The bet

specifies the Turing Test in some detail.[edit] TerminologyIn Turing's paper, the term 'Imitation Game' is used for his proposed test as well as the party game for men and women. The name 'Turing test' may have been invented, and was certainly publicized, by Arthur C. Clarke in the science-fiction novel 2001: A Space Odyssey (1968), where it is applied to the computer HAL 9000.[edit] Variations of the Turing testA modification of the Turing test, where the objective or one or more of the roles have been reversed between computers and humans, is termed a reverse Turing test. Another variation of the Turing test is described as the Subject matter expert Turing test where a computer's response cannot be distinguished from an expert in a given field. As brain and body scanning techniques improve it may also be possible to replicate the essential data elements of a person to a computer system.[citation needed] The Immortality test variation of the Turing test would determine if a person's essential character is reproduced with enough fidelity to make it impossible to distinguish a reproduction of a person from the original person. The Minimum Intelligent Signal Test proposed by Chris McKinstry, is another variation of Turing's test, but where only binary responses are permitted. It is typically used to gather statistical data against which the performance of artificial intelligence programs may be measured.[edit] References

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- \* S. G. Sterrett 'Nested Algorithms and the 'Original Imitation Game Test', ' *Minds and Machines* (2002). ISSN 0924-6495

[edit] See also

- \* Artificial intelligence
- \* The AI effect
- \* CAPTCHA
- \* Chatterbot
- \* Chinese room
- \* Blockhead
- \* Loebner prize
- \* Mark V Shaney (computer program)
- \* Philosophy of artificial intelligence
- \* Reverse Turing test
- \* Simulated reality
- \* Technological singularity
- \* Uncanny Valley
- \* Voight Kampff
- \* HAL 9000, Kubrick's human-like AI

[edit] External links

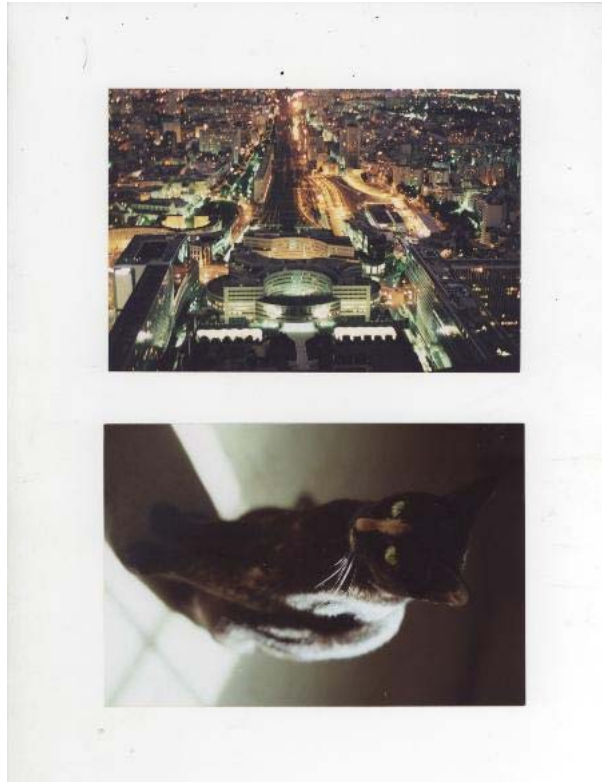
- \* The Turing Test- How accurate could the turing test really be?
- \* Stanford Encyclopedia of Philosophy entry on the Turing test, by G. Oppy and D. Dowe.
- \* The Turing Test Page lists recent articles, links, and other info on the test.
- \* Turing Test: 50 Years Later reviews a half-century of work on the Turing Test, from the vantage point of 2000.
- \* Bet between Kapur and Kurzweil, including detailed justifications of their respective positions.
- \* Why The Turing Test is AI's Biggest Blind Alley by Blay Witby
- \* A humorous look at proving the non-intelligence of a Twinkie
- \* TuringHub.com Take the Turing Test, live, online
- \* Jabberwacky.com An AI chatterbot that learns from and imitates humans
- \* New York Times essays on machine intelligence part 1 and part 2
- \* Today's Bewildering Conversation with a Three-Year-Old Jeopardy winner Ken Jennings blogs about a humorous Turing-challenged conversation with his toddler son.
- \* Machines Who Think': Scientific American Frontiers video on 'the first ever [restricted] Turing test.'
- \* Simulate the results of human thinking

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Wednesday, May 09, 2007  
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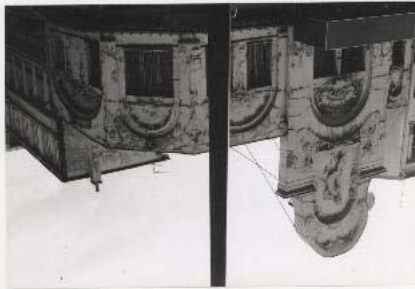
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Wednesday, May 09, 2007  
From: "Life Tracker" To: Run59

## test 2 body

Rendering is the process of generating an image from a model, by means of computer programs. The model is a description of three dimensional objects in a strictly defined language or data structure. It would contain geometry, viewpoint, texture, lighting, and shading information. The image is a digital image or raster graphics image. The term may be by analogy with an "artist's rendering" of a scene. 'Rendering' is also used to describe the process of calculating effects in a video editing file to produce final video output. It is one of the major sub-topics of 3D computer graphics, and in practice always connected to the others. In the graphics pipeline, it is the last major step, giving the final appearance to the models and animation. With the increasing sophistication of computer graphics since the 1970s onward, it has become a more distinct subject. Rendering has uses in video games, simulators, movie or TV special effects, and design visualization, each employing a different balance of features and techniques. As a product, a wide variety of renderers are available. Some are integrated into larger modeling and animation packages, some are stand-alone, some are free open-source projects. On the inside, a renderer is a carefully engineered

program, based on a selective mixture of disciplines related to: light physics, visual perception, mathematics, and software development. In the case of 3D graphics, rendering may be done slowly, as in pre-rendering, or in real time. Pre-rendering is a computationally intensive process that is typically used for movie creation, while real-time rendering is often done for 3D video games which rely on the use of graphics cards with 3D hardware accelerators.

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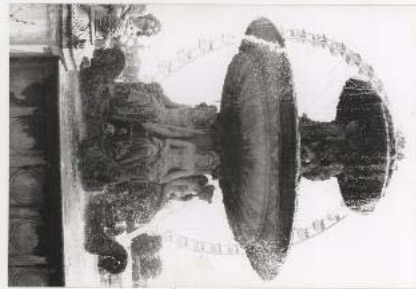
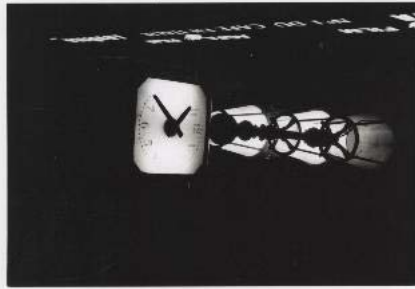
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### test 2 body + 3 pics

Rendering is the process of generating an image from a model, by means of computer programs. The model is a description of three dimensional objects in a strictly defined language or data structure. It would contain geometry, viewpoint, texture, lighting, and shading information. The image is a digital image or raster graphics image. The term may be by analogy with an 'artist's rendering' of a scene. 'Rendering' is also used to describe the process of calculating effects in a video editing file to produce final video output. It is one of the major sub-topics of 3D computer graphics, and in practice always connected to the others. In the graphics pipeline, it is the last major step, giving the final appearance to the models and animation. With the increasing sophistication of computer graphics since the 1970s onward, it has become a more distinct subject. Rendering has uses in video games, simulators, movie or TV special effects, and design visualization, each employing a different balance of features and techniques. As a product, a wide variety of renderers are available. Some are integrated into larger modeling and animation packages, some are stand-alone, some are free open-source projects. On the inside, a renderer is a carefully engineered program, based on a selective mixture of disciplines related to: light physics, visual perception, mathematics, and software development. In the case of 3D graphics, rendering may be done slowly, as in pre-rendering, or in real time. Pre-rendering is a computationally intensive process that is typically used for movie creation, while real-time rendering is often done for 3D video games which rely on the use of graphics cards with 3D hardware accelerators.

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