

= Nobel Prize =

The Nobel Prize (/ ˈnɒbəl / , Swedish pronunciation : [nʊbəl] ; Swedish definite form , singular : Nobelpriset ; Norwegian : Nobelprisen) is a set of annual international awards bestowed in a number of categories by Swedish and Norwegian committees in recognition of academic , cultural and / or scientific advances .

The will of the Swedish inventor Alfred Nobel established the prizes in 1895 . The prizes in Chemistry , Literature , Peace , Physics , and Physiology or Medicine were first awarded in 1901 . The related Nobel Memorial Prize in Economic Sciences was established by Sweden 's central bank in 1968 . Medals made before 1980 were struck in 23 carat gold , and later from 18 carat green gold plated with a 24 carat gold coating . Between 1901 and 2015 , the Nobel Prizes and the Prize in Economic Sciences were awarded 573 times to 900 people and organizations . With some receiving the Nobel Prize more than once , this makes a total of 870 individuals (822 men and 48 women) and 23 organizations .

The prize ceremonies take place annually in Stockholm , Sweden , except for the peace prize which is held in Oslo , Norway and each recipient , or laureate , receives a gold medal , a diploma and a sum of money that has been decided by the Nobel Foundation . (As of 2012 , each prize was worth SEK8 million or about US \$ 1 @ . @ 2 million , ? 0 @ . @ 93 million or £ 0 @ . @ 6 million .) The Nobel Prize is widely regarded as the most prestigious award available in the fields of literature , medicine , physics , chemistry , peace , and economics .

The Royal Swedish Academy of Sciences awards the Nobel Prize in Physics , the Nobel Prize in Chemistry , and the Nobel Memorial Prize in Economic Sciences ; the Nobel Assembly at Karolinska Institutet awards the Nobel Prize in Physiology or Medicine ; the Swedish Academy grants the Nobel Prize in Literature ; and the Nobel Peace Prize is awarded not by a Swedish organisation but by the Norwegian Nobel Committee .

The prize is not awarded posthumously ; however , if a person is awarded a prize and dies before receiving it , the prize may still be presented . Though the average number of laureates per prize increased substantially during the 20th century , a prize may not be shared among more than three people .

= = History = =

Alfred Nobel (listen) was born on 21 October 1833 in Stockholm , Sweden , into a family of engineers . He was a chemist , engineer , and inventor . In 1894 , Nobel purchased the Bofors iron and steel mill , which he made into a major armaments manufacturer . Nobel also invented ballistite . This invention was a precursor to many smokeless military explosives , especially the British smokeless powder cordite . As a consequence of his patent claims , Nobel was eventually involved in a patent infringement lawsuit over cordite . Nobel amassed a fortune during his lifetime , with most of his wealth from his 355 inventions , of which dynamite is the most famous .

In 1888 , Nobel was astonished to read his own obituary , titled The merchant of death is dead , in a French newspaper . As it was Alfred 's brother Ludvig who had died , the obituary was eight years premature . The article disconcerted Nobel and made him apprehensive about how he would be remembered . This inspired him to change his will . On 10 December 1896 , Alfred Nobel died in his villa in San Remo , Italy , from a cerebral haemorrhage . He was 63 years old .

Nobel wrote several wills during his lifetime . He composed the last over a year before he died , signing it at the Swedish ? Norwegian Club in Paris on 27 November 1895 . To widespread astonishment , Nobel 's last will specified that his fortune be used to create a series of prizes for those who confer the " greatest benefit on mankind " in physics , chemistry , physiology or medicine , literature , and peace . Nobel bequeathed 94 % of his total assets , 31 million SEK (c . US \$ 186 million , ? 150 million in 2008) , to establish the five Nobel Prizes . Because of scepticism surrounding the will , it was not until 26 April 1897 that it was approved by the Storting in Norway . The executors of Nobel 's will , Ragnar Sohlman and Rudolf Lilljequist , formed the Nobel Foundation to take care of Nobel 's fortune and organise the award of prizes .

Nobel 's instructions named a Norwegian Nobel Committee to award the Peace Prize , the members of whom were appointed shortly after the will was approved in April 1897 . Soon thereafter , the other prize @-@ awarding organisations were designated or established . These were Karolinska Institutet on 7 June , the Swedish Academy on 9 June , and the Royal Swedish Academy of Sciences on 11 June . The Nobel Foundation reached an agreement on guidelines for how the prizes should be awarded ; and , in 1900 , the Nobel Foundation 's newly created statutes were promulgated by King Oscar II . In 1905 , the personal union between Sweden and Norway was dissolved .

= = = Nobel Foundation = = =

The Nobel Foundation was founded as a private organisation on 29 June 1900 . Its function is to manage the finances and administration of the Nobel Prizes . In accordance with Nobel 's will , the primary task of the Foundation is to manage the fortune Nobel left . Robert and Ludwig Nobel were involved in the oil business in Azerbaijan and , according to Swedish historian E. Bargengren , who accessed the Nobel family archives , it was this " decision to allow withdrawal of Alfred 's money from Baku that became the decisive factor that enabled the Nobel Prizes to be established " . Another important task of the Nobel Foundation is to market the prizes internationally and to oversee informal administration related to the prizes . The Foundation is not involved in the process of selecting the Nobel laureates . In many ways , the Nobel Foundation is similar to an investment company , in that it invests Nobel 's money to create a solid funding base for the prizes and the administrative activities . The Nobel Foundation is exempt from all taxes in Sweden (since 1946) and from investment taxes in the United States (since 1953) . Since the 1980s , the Foundation 's investments have become more profitable and as of 31 December 2007 , the assets controlled by the Nobel Foundation amounted to 3 @. @ 628 billion Swedish kronor (c . US \$ 560 million) .

According to the statutes , the Foundation consists of a board of five Swedish or Norwegian citizens , with its seat in Stockholm . The Chairman of the Board is appointed by the Swedish King in Council , with the other four members appointed by the trustees of the prize @-@ awarding institutions . An Executive Director is chosen from among the board members , a Deputy Director is appointed by the King in Council , and two deputies are appointed by the trustees . However , since 1995 , all the members of the board have been chosen by the trustees , and the Executive Director and the Deputy Director appointed by the board itself . As well as the board , the Nobel Foundation is made up of the prize @-@ awarding institutions (the Royal Swedish Academy of Sciences , the Nobel Assembly at Karolinska Institute , the Swedish Academy , and the Norwegian Nobel Committee) , the trustees of these institutions , and auditors .

= = = First prizes = = =

Once the Nobel Foundation and its guidelines were in place , the Nobel Committees began collecting nominations for the inaugural prizes . Subsequently they sent a list of preliminary candidates to the prize @-@ awarding institutions .

The Nobel Committee 's Physics Prize shortlist cited Wilhelm Röntgen 's discovery of X @-@ rays and Philipp Lenard 's work on cathode rays . The Academy of Sciences selected Röntgen for the prize . In the last decades of the 19th century , many chemists had made significant contributions . Thus , with the Chemistry Prize , the Academy " was chiefly faced with merely deciding the order in which these scientists should be awarded the prize . " The Academy received 20 nominations , eleven of them for Jacobus van 't Hoff . Van 't Hoff was awarded the prize for his contributions in chemical thermodynamics .

The Swedish Academy chose the poet Sully Prudhomme for the first Nobel Prize in Literature . A group including 42 Swedish writers , artists and literary critics protested against this decision , having expected Leo Tolstoy to be awarded . Some , including Burton Feldman , have criticised this prize because they consider Prudhomme a mediocre poet . Feldman 's explanation is that most of the Academy members preferred Victorian literature and thus selected a Victorian poet . The first

Physiology or Medicine Prize went to the German physiologist and microbiologist Emil von Behring . During the 1890s , von Behring developed an antitoxin to treat diphtheria , which until then was causing thousands of deaths each year .

The first Nobel Peace Prize went to the Swiss Jean Henri Dunant for his role in founding the International Red Cross Movement and initiating the Geneva Convention , and jointly given to French pacifist Frédéric Passy , founder of the Peace League and active with Dunant in the Alliance for Order and Civilization .

= = = Second World War = = =

In 1938 and 1939 , Adolf Hitler 's Third Reich forbade three laureates from Germany (Richard Kuhn , Adolf Friedrich Johann Butenandt , and Gerhard Domagk) from accepting their prizes . Each man was later able to receive the diploma and medal . Even though Sweden was officially neutral during the Second World War , the prizes were awarded irregularly . In 1939 , the Peace Prize was not awarded . No prize was awarded in any category from 1940 ? 42 , due to the occupation of Norway by Germany . In the subsequent year , all prizes were awarded except those for literature and peace .

During the occupation of Norway , three members of the Norwegian Nobel Committee fled into exile . The remaining members escaped persecution from the Germans when the Nobel Foundation stated that the Committee building in Oslo was Swedish property . Thus it was a safe haven from the German military , which was not at war with Sweden . These members kept the work of the Committee going , but did not award any prizes . In 1944 , the Nobel Foundation , together with the three members in exile , made sure that nominations were submitted for the Peace Prize and that the prize could be awarded once again .

= = = Prize in Economic Sciences = = =

In 1968 , Sveriges Riksbank celebrated its 300th anniversary by donating a large sum of money to the Nobel Foundation to be used to set up a prize in honor of Nobel . The following year , the Nobel Memorial Prize in Economic Sciences was awarded for the first time . The Royal Swedish Academy of Sciences became responsible for selecting laureates . The first laureates for the Economics Prize were Jan Tinbergen and Ragnar Frisch " for having developed and applied dynamic models for the analysis of economic processes . " Although not a Nobel Prize , it is intimately identified with the other awards ; the laureates are announced with the Nobel Prize recipients , and the Prize in Economic Sciences is presented at the Swedish Nobel Prize Award Ceremony . The Board of the Nobel Foundation decided that after this addition , it would allow no further new prizes .

= = Award process = =

The award process is similar for all of the Nobel Prizes ; the main difference is in who can make nominations for each of them .

= = = Nominations = = =

Nomination forms are sent by the Nobel Committee to about 3 @, @ 000 individuals , usually in September the year before the prizes are awarded . These individuals are generally prominent academics working in a relevant area . Regarding the Peace Prize , inquiries are also sent to governments , former Peace Prize laureates and current or former members of the Norwegian Nobel Committee . The deadline for the return of the nomination forms is 31 January of the year of the award . The Nobel Committee nominates about 300 potential laureates from these forms and additional names . The nominees are not publicly named , nor are they told that they are being considered for the prize . All nomination records for a prize are sealed for 50 years from the awarding of the prize .

== Selection ==

The Nobel Committee then prepares a report reflecting the advice of experts in the relevant fields . This , along with the list of preliminary candidates , is submitted to the prize @-@ awarding institutions . The institutions meet to choose the laureate or laureates in each field by a majority vote . Their decision , which cannot be appealed , is announced immediately after the vote . A maximum of three laureates and two different works may be selected per award . Except for the Peace Prize , which can be awarded to institutions , the awards can only be given to individuals . If the Peace Prize is not awarded , the money is split among the scientific prizes . This has happened 19 times so far .

== Posthumous nominations ==

Although posthumous nominations are not presently permitted , individuals who died in the months between their nomination and the decision of the prize committee were originally eligible to receive the prize . This has occurred twice : the 1931 Literature Prize awarded to Erik Axel Karlfeldt , and the 1961 Peace Prize awarded to UN Secretary General Dag Hammarskjöld . Since 1974 , laureates must be thought alive at the time of the October announcement . There has been one laureate , William Vickrey , who in 1996 died after the prize (in Economics) was announced but before it could be presented . On 3 October 2011 , the laureates for the Nobel Prize in Physiology or Medicine were announced ; however , the committee was not aware that one of the laureates , Ralph M. Steinman , had died three days earlier . The committee was debating about Steinman 's prize , since the rule is that the prize is not awarded posthumously . The committee later decided that as the decision to award Steinman the prize " was made in good faith " , it would remain unchanged .

== Recognition time lag ==

Nobel 's will provided for prizes to be awarded in recognition of discoveries made " during the preceding year " . Early on , the awards usually recognised recent discoveries . However , some of these early discoveries were later discredited . For example , Johannes Fibiger was awarded the 1926 Prize for Physiology or Medicine for his purported discovery of a parasite that caused cancer . To avoid repeating this embarrassment , the awards increasingly recognised scientific discoveries that had withstood the test of time . According to Ralf Pettersson , former chairman of the Nobel Prize Committee for Physiology or Medicine , " the criterion ' the previous year ' is interpreted by the Nobel Assembly as the year when the full impact of the discovery has become evident . "

The interval between the award and the accomplishment it recognises varies from discipline to discipline . The Literature Prize is typically awarded to recognise a cumulative lifetime body of work rather than a single achievement . The Peace Prize can also be awarded for a lifetime body of work . For example , 2008 laureate Martti Ahtisaari was awarded for his work to resolve international conflicts . However , they can also be awarded for specific recent events . For instance , Kofi Annan was awarded the 2001 Peace Prize just four years after becoming the Secretary @-@ General of the United Nations . Similarly Yasser Arafat , Yitzhak Rabin , and Shimon Peres received the 1994 award , about a year after they successfully concluded the Oslo Accords .

Although Nobel 's will stated that prizes should be awarded for contributions made " during the preceding year " , awards for physics , chemistry , and medicine are typically awarded once the achievement has been widely accepted . Sometimes , this takes decades ? for example , Subrahmanyan Chandrasekhar shared the 1983 Physics Prize for his 1930s work on stellar structure and evolution . Not all scientists live long enough for their work to be recognised . Some discoveries can never be considered for a prize if their impact is realised after the discoverers have died .

= = Award ceremonies = =

Except for the Peace Prize , the Nobel Prizes are presented in Stockholm , Sweden , at the annual Prize Award Ceremony on 10 December , the anniversary of Nobel 's death . The recipients ' lectures are normally held in the days prior to the award ceremony . The Peace Prize and its recipients ' lectures are presented at the annual Prize Award Ceremony in Oslo , Norway , usually on 10 December . The award ceremonies and the associated banquets are typically major international events . The Prizes awarded in Sweden 's ceremonies ' are held at the Stockholm Concert Hall , with the Nobel banquet following immediately at Stockholm City Hall . The Nobel Peace Prize ceremony has been held at the Norwegian Nobel Institute (1905 ? 1946) , at the auditorium of the University of Oslo (1947 ? 1989) and at Oslo City Hall (1990 ? present) .

The highlight of the Nobel Prize Award Ceremony in Stockholm occurs when each Nobel laureate steps forward to receive the prize from the hands of the King of Sweden . In Oslo , the Chairman of the Norwegian Nobel Committee presents the Nobel Peace Prize in the presence of the King of Norway . At first King Oscar II did not approve of awarding grand prizes to foreigners . It is said that his mind changed once his attention had been drawn to the publicity value of the prizes for Sweden .

= = = Nobel Banquet = = =

After the award ceremony in Sweden , a banquet is held in the Blue Hall at the Stockholm City Hall , which is attended by the Swedish Royal Family and around 1 @, @ 300 guests .

The Nobel Peace Prize banquet is held in Norway at the Oslo Grand Hotel after the award ceremony . Apart from the laureate , guests include the President of the Storting , the Prime Minister , and , since 2006 , the King and Queen of Norway . In total , about 250 guests attend .

= = = Nobel lecture = = =

According to the statutes of the Nobel Foundation , each laureate is required to give a public lecture on a subject related to the topic of their prize . The Nobel lecture as a rhetorical genre took decades to reach its current format . These lectures normally occur during Nobel Week (the week leading up to the award ceremony and banquet , which begins with the laureates arriving in Stockholm and normally ends with the Nobel banquet) , but this is not mandatory . The laureate is only obliged to give the lecture within six months of receiving the prize . Some have happened even later . For example , U.S. President Theodore Roosevelt received the Peace Prize in 1906 but gave his lecture in 1910 , after his term in office . The lectures are organized by the same association which selected the laureates .

= = Prizes = =

= = = Medals = = =

It was announced on 30 May 2012 that the Nobel Foundation had awarded the contract for the production of the five (Swedish) Nobel Prize medals to Svenska Medalj AB . Formerly , the Nobel Prize medals were minted by Myntverket (the Swedish Mint) from 1902 to 2010 . Myntverket , Sweden 's oldest company , ceased operations in 2011 after 1 @, @ 017 years . In 2011 , the Mint of Norway , located in Kongsberg , made the medals . The Nobel Prize medals are registered trademarks of the Nobel Foundation . Each medal features an image of Alfred Nobel in left profile on the obverse . The medals for physics , chemistry , physiology or medicine , and literature have identical obverses , showing the image of Alfred Nobel and the years of his birth and death . Nobel 's portrait also appears on the obverse of the Peace Prize medal and the medal for the Economics Prize , but with a slightly different design . For instance , the laureate 's name is engraved on the rim

of the Economics medal . The image on the reverse of a medal varies according to the institution awarding the prize . The reverse sides of the medals for chemistry and physics share the same design .

All medals made before 1980 were struck in 23 carat gold . Since then , they have been struck in 18 carat green gold plated with 24 carat gold . The weight of each medal varies with the value of gold , but averages about 175 grams (0 @. @ 386 lb) for each medal . The diameter is 66 millimetres (2 @. @ 6 in) and the thickness varies between 5 @. @ 2 millimetres (0 @. @ 20 in) and 2 @. @ 4 millimetres (0 @. @ 094 in) . Because of the high value of their gold content and tendency to be on public display , Nobel medals are subject to medal theft . During World War II , the medals of German scientists Max von Laue and James Franck were sent to Copenhagen for safekeeping . When Germany invaded Denmark , chemist George de Hevesy dissolved them in aqua regia (nitro @- @ hydrochloric acid) , to prevent confiscation by Nazi Germany and to prevent legal problems for the holders . After the war , the gold was recovered from solution , and the medals re @- @ cast .

= = = Diplomas = = =

Nobel laureates receive a diploma directly from the hands of the King of Sweden or , in the case of the peace prize , the Chairman of the Norwegian Nobel Committee . Each diploma is uniquely designed by the prize @- @ awarding institutions for the laureates that receive them . The diploma contains a picture and text in Swedish which states the name of the laureate and normally a citation of why they received the prize . None of the Nobel Peace Prize laureates has ever had a citation on their diplomas .

= = = Award money = = =

The laureates are given a sum of money when they receive their prizes , in the form of a document confirming the amount awarded . The amount of prize money depends upon how much money the Nobel Foundation can award each year . The purse has increased since the 1980s , when the prize money was 880 000 SEK (c . 2 @. @ 6 million SEK , US \$ 350 000 or ? 295 @, @ 000 today) per prize . In 2009 , the monetary award was 10 million SEK (US \$ 1 @. @ 4 million , ? 950 @, @ 000) . In June 2012 , it was lowered to 8 million SEK . If there are two laureates in a particular category , the award grant is divided equally between the recipients . If there are three , the awarding committee has the option of dividing the grant equally , or awarding one @- @ half to one recipient and one @- @ quarter to each of the others . It is common for recipients to donate prize money to benefit scientific , cultural , or humanitarian causes .

= = Controversies and criticisms = =

= = = Controversial recipients = = =

Among other criticisms , the Nobel Committees have been accused of having a political agenda , and of omitting more deserving candidates . They have also been accused of Eurocentrism , especially for the Literature Prize .

Peace Prize

Among the most criticised Nobel Peace Prizes was the one awarded to Henry Kissinger and Lê ??c Th? . This led to the resignation of two Norwegian Nobel Committee members . Lê ??c Th? declined the prize . Kissinger and Th? were awarded the prize for negotiating a ceasefire between North Vietnam and the United States in January 1973 . However , when the award was announced , both sides were still engaging in hostilities . Many critics were of the opinion that Kissinger was not a peace @- @ maker but the opposite , responsible for widening the war .

Yasser Arafat , Shimon Peres , and Yitzhak Rabin received the Peace Prize in 1994 for their efforts

in making peace between Israel and Palestine . Immediately after the award was announced , one of the five Norwegian Nobel Committee members denounced Arafat as a terrorist and resigned . Additional misgivings about Arafat were widely expressed in various newspapers .

Another controversial Peace Prize was that awarded to Barack Obama in 2009 . Nominations had closed only eleven days after Obama took office as President , but the actual evaluation occurred over the next eight months . Obama himself stated that he did not feel deserving of the award , or worthy of the company it would place him in . Past Peace Prize laureates were divided , some saying that Obama deserved the award , and others saying he had not secured the achievements to yet merit such an accolade . Obama 's award , along with the previous Peace Prizes for Jimmy Carter and Al Gore , also prompted accusations of a left @-@ wing bias .

Literature Prize

The award of the 2004 Literature Prize to Elfriede Jelinek drew a protest from a member of the Swedish Academy , Knut Ahnlund . Ahnlund resigned , alleging that the selection of Jelinek had caused " irreparable damage to all progressive forces , it has also confused the general view of literature as an art . " He alleged that Jelinek 's works were " a mass of text shovelled together without artistic structure . " The 2009 Literature Prize to Herta Müller also generated criticism . According to The Washington Post many US literary critics and professors were ignorant of her work . This made those critics feel the prizes were too Eurocentric .

Science prizes

In 1949 , the neurologist António Egas Moniz received the Physiology or Medicine Prize for his development of the prefrontal leucotomy . The previous year Dr. Walter Freeman had developed a version of the procedure which was faster and easier to carry out . Due in part to the publicity surrounding the original procedure , Freeman 's procedure was prescribed without due consideration or regard for modern medical ethics . Endorsed by such influential publications as The New England Journal of Medicine , leucotomy or " lobotomy " became so popular that about 5 @,@ 000 lobotomies were performed in the United States in the three years immediately following Moniz 's receipt of the Prize .

= = = Overlooked achievements = = =

The Norwegian Nobel Committee confirmed that Mahatma Gandhi was nominated for the Peace Prize in 1937 ? 39 , 1947 , and a few days before he was assassinated in January 1948 . Later , members of the Norwegian Nobel Committee expressed regret that he was not given the prize . Geir Lundestad , Secretary of Norwegian Nobel Committee in 2006 said , " The greatest omission in our 106 year history is undoubtedly that Mahatma Gandhi never received the Nobel Peace prize . Gandhi could do without the Nobel Peace prize . Whether Nobel committee can do without Gandhi is the question " . In 1948 , the year of Gandhi 's death , the Nobel Committee declined to award a prize on the grounds that " there was no suitable living candidate " that year . Later , when the Dalai Lama was awarded the Peace Prize in 1989 , the chairman of the committee said that this was " in part a tribute to the memory of Mahatma Gandhi . " Other high profile individuals with widely recognised contributions to peace have been missed out . Foreign Policy lists Eleanor Roosevelt , Václav Havel , Ken Saro @-@ Wiwa , Sari Nusseibeh and Corazon Aquino as people who " never won the prize , but should have . " . The physicist Arnold Sommerfeld was nominated 81 times but an award was never made .

In 1965 , UN Secretary General U Thant was informed by the Norwegian Permanent Representative to the UN that he would be awarded that year 's prize and asked whether or not he would accept . He consulted staff and later replied that he would . At the same time , Chairman Gunnar Jahn of the Nobel Peace prize committee , lobbied heavily against giving U Thant the prize and the prize was at the last minute awarded to UNICEF . The rest of the committee all wanted the prize to go to U Thant , for his work in defusing the Cuban Missile Crisis , ending the war in the Congo , and his ongoing work to mediate an end to the Vietnam War . The disagreement lasted three years and in 1966 and 1967 no prize was given , with Gunnar Jahn effectively vetoing an award to U Thant .

The Literature Prize also has controversial omissions . Adam Kirsch has suggested that many notable writers have missed out on the award for political or extra @-@ literary reasons . The heavy focus on European and Swedish authors has been a subject of criticism . The Eurocentric nature of the award was acknowledged by Peter Englund , the 2009 Permanent Secretary of the Swedish Academy , as a problem with the award and was attributed to the tendency for the academy to relate more to European authors . This tendency towards European authors still leaves a number of European writers on a list of notable writers that have been overlooked for the Literature Prize , including Europe 's Leo Tolstoy , Anton Chekhov , J. R. R. Tolkien , Émile Zola , Marcel Proust , Vladimir Nabokov , James Joyce , August Strindberg , Simon Vestdijk , the New World 's Jorge Luis Borges , Ezra Pound , John Updike , Arthur Miller , Mark Twain , and Africa 's Chinua Achebe .

The strict rule against awarding a prize to more than three people is also controversial . When a prize is awarded to recognize an achievement by a team of more than three collaborators , one or more will miss out . For example , in 2002 , the prize was awarded to Koichi Tanaka and John Fenn for the development of mass spectrometry in protein chemistry , an award that did not recognize the achievements of Franz Hillenkamp and Michael Karas of the Institute for Physical and Theoretical Chemistry at the University of Frankfurt . According to one of the nominees for the prize in physics , the three person limit deprived him and two other members of his team of the honor in 2013 : the team of Carl Hagen , Gerald Guralnik , and Tom Kibble published a paper in 1964 that gave answers to how the Cosmos began , but did not share the 2013 Physics Prize awarded to Peter Higgs and François Englert , who had also published papers in 1964 concerning the subject . All five physicists arrived at the same conclusion , albeit from different angles . Hagen contends that an equitable solution is to either abandon the three limit restriction , or expand the time period of recognition for a given achievement to two years .

Similarly , the prohibition of posthumous awards fails to recognise achievements by an individual or collaborator who dies before the prize is awarded . In 1962 , Francis Crick , James D. Watson , and Maurice Wilkins were awarded the Physiology or Medicine Prize for discovering the structure of DNA . Rosalind Franklin , a key contributor in that discovery , died of ovarian cancer four years earlier . The Economics Prize was not awarded to Fischer Black , who died in 1995 , when his co @-@ author Myron Scholes received the honor in 1997 for their landmark work on option pricing along with Robert C. Merton , another pioneer in the development of valuation of stock options . In the announcement of the award that year , the Nobel committee prominently mentioned Black 's key role .

Political subterfuge may also deny proper recognition . Lise Meitner and Fritz Strassmann , who co @-@ discovered nuclear fission along with Otto Hahn , may have been denied a share of Hahn 's 1944 Nobel Chemistry Award due to having fled Germany when the Nazis came to power . The Meitner and Strassmann roles in the research was not fully recognized until years later , when they joined Hahn in receiving the 1966 Enrico Fermi Award .

= = = Emphasis on discoveries over inventions = = =

Alfred Nobel left his fortune to finance annual prizes to be awarded " to those who , during the preceding year , shall have conferred the greatest benefit on mankind . " He stated that the Nobel Prizes in Physics should be given " to the person who shall have made the most important ' discovery ' or ' invention ' within the field of physics . " Nobel did not emphasise discoveries , but they have historically been held in higher respect by the Nobel Prize Committee than inventions : 77 % of the Physics Prizes have been given to discoveries , compared with only 23 % to inventions . Christoph Bartneck and Matthias Rauterberg , in papers published in *Nature* and *Technoetic Arts* , have argued this emphasis on discoveries has moved the Nobel Prize away from its original intention of rewarding the greatest contribution to society .

= = Specially distinguished laureates = =

== Multiple laureates ==

Four people have received two Nobel Prizes . Marie Curie received the Physics Prize in 1903 for her work on radioactivity and the Chemistry Prize in 1911 for the isolation of pure radium , making her the only person to win a Nobel Prize in two different sciences . Linus Pauling won the 1954 Chemistry Prize for his research into the chemical bond and its application to the structure of complex substances . Pauling also won the Peace Prize in 1962 for his activism against nuclear weapons , making him the only laureate of two unshared prizes . John Bardeen received the Physics Prize twice : in 1956 for the invention of the transistor and in 1972 for the theory of superconductivity . Frederick Sanger received the prize twice in Chemistry : in 1958 for determining the structure of the insulin molecule and in 1980 for inventing a method of determining base sequences in DNA .

Two organisations have received the Peace Prize multiple times . The International Committee of the Red Cross received it three times : in 1917 and 1944 for its work during the world wars ; and in 1963 during the year of its centenary . The United Nations High Commissioner for Refugees has won the Peace Prize twice for assisting refugees : in 1954 and 1981 .

== Family laureates ==

The Curie family has received the most prizes , with four prizes won by five individual laureates . Marie Curie received the prizes in Physics (in 1903) and Chemistry (in 1911) . Her husband , Pierre Curie , shared the 1903 Physics prize with her . Their daughter , Irène Joliot @-@ Curie , received the Chemistry Prize in 1935 together with her husband Frédéric Joliot @-@ Curie . In addition , the husband of Marie Curie 's second daughter , Henry Labouisse , was the director of UNICEF when it won the Nobel Peace Prize in 1965 .

Although no family matches the Curie family 's record , there have been several with two laureates . The husband @-@ and @-@ wife team of Gerty Cori and Carl Ferdinand Cori shared the 1947 Prize in Physiology or Medicine as did the husband @-@ and @-@ wife team of May @-@ Britt Moser and Edvard Moser in 2014 (along with John O 'Keefe) . J. J. Thomson was awarded the Physics Prize in 1906 for showing that electrons are particles . His son , George Paget Thomson , received the same prize in 1937 for showing that they also have the properties of waves . William Henry Bragg and his son , William Lawrence Bragg , shared the Physics Prize in 1915 for inventing the X @-@ ray spectrometer . Niels Bohr won the Physics prize in 1922 , as did his son , Aage Bohr , in 1975 . Manne Siegbahn , who received the Physics Prize in 1924 , was the father of Kai Siegbahn , who received the Physics Prize in 1981 . Hans von Euler @-@ Chelpin , who received the Chemistry Prize in 1929 , was the father of Ulf von Euler , who was awarded the Physiology or Medicine Prize in 1970 . C.V. Raman won the Physics Prize in 1930 and was the uncle of Subrahmanyan Chandrasekhar , who won the same prize in 1983 . Arthur Kornberg received the Physiology or Medicine Prize in 1959 . Kornberg 's son , Roger later received the Chemistry Prize in 2006 . Jan Tinbergen , who won the first Economics Prize in 1969 , was the brother of Nikolaas Tinbergen , who received the 1973 Physiology or Medicine Prize . Alva Myrdal , Peace Prize laureate in 1982 , was the wife of Gunnar Myrdal who was awarded the Economics Prize in 1974 . Economics laureates Paul Samuelson and Kenneth Arrow were brothers @-@ in @-@ law .

== Cultural impact ==

Being a symbol of scientific or literary achievement that 's recognisable worldwide , the Nobel Prize is often depicted in fiction . This includes films like The Prize and Nobel Son about fictional Nobel laureates as well as fictionalized accounts of stories surrounding real prizes such as Nobel Chor , a film based on the unsolved theft of Rabindranath Tagore 's prize .

== Refusals and constraints ==

Two laureates have voluntarily declined the Nobel Prize . In 1964 , Jean @-@ Paul Sartre was awarded the Literature Prize but refused , stating , " A writer must refuse to allow himself to be transformed into an institution , even if it takes place in the most honourable form . " The other is Lê ??c Th? , chosen for the 1973 Peace Prize for his role in the Paris Peace Accords . He declined , stating that there was no actual peace in Vietnam .

During the Third Reich , Adolf Hitler hindered Richard Kuhn , Adolf Butenandt , and Gerhard Domagk from accepting their prizes . All of them were awarded their diplomas and gold medals after World War II . In 1958 , Boris Pasternak declined his prize for literature due to fear of what the Soviet Union government might do if he travelled to Stockholm to accept his prize . In return , the Swedish Academy refused his refusal , saying " this refusal , of course , in no way alters the validity of the award . " The Academy announced with regret that the presentation of the Literature Prize could not take place that year , holding it until 1989 when Pasternak 's son accepted the prize on his behalf . Aung San Suu Kyi was awarded the Nobel Peace Prize in 1991 , but her children accepted the prize because she had been placed under house arrest in Burma ; Suu Kyi delivered her speech two decades later , in 2012 . Liu Xiaobo was awarded the Nobel Peace Prize in 2010 while he and his wife were under house arrest in China as political prisoners .

= = Legacy = =

The memorial symbol " Planet of Alfred Nobel " was opened in Dnipropetrovsk University of Economics and Law in 2008 . On the globe , there are 802 Nobel laureates ' reliefs made of a composite alloy obtained when disposing of military strategic missiles .