

Box 2: Nobel Controversies

The failure of the Nobel Committee for Physics to recognize the experimental and theoretical contributions of Lise Meitner and Otto Frisch naturally raises the question: Was this an isolated event or are there other instances in which contextual factors or the personal predilections of committee members have influenced committee recommendations? The scholarship that has accumulated since 1974, when the materials in the Nobel archives for physics and chemistry first became available to researchers under a 50-year rule, makes it possible to give some preliminary answers to this question.

It is hardly possible to separate scientific from nonscientific influences in most Nobel recommendations. Instead, let us ask whether nonscientific influences have at times taken the upper hand, with the result that prizes have been awarded for undeserving discoveries or, conversely, that scientists have been unjustly barred from a prize they deserved.

According to Alfred Nobel's will, the prizes reward the authors of "discoveries" that preferably bring some "benefit to mankind" rather than individual scientists for general scientific achievements. The work of the Nobel committees is therefore very much directed at identifying prizeworthy discoveries and evaluating scientists who have participated in them.

There are two broad categories of nonscientific influences on awards that have been either ill-timed or perhaps should not have been made at all. The first category concerns the prizes awarded under the exceptional conditions that reigned in the immediate aftermaths of the two world wars. In both periods, decisions were influenced by the political notion that the prizes, awarded by Swedish scientists who had remained neutral in the conflicts, could be used to reestablish prewar internationalism in science. One way to do that was to rehabilitate the losers. Thus, in 1919, three German scientists were awarded prizes, among them Fritz Haber, the inventor of gas warfare, receiving the chemistry prize for his discovery of the Haber-Bosch process of ammonia synthesis. As this discovery was very important for the munitions industry during the war, it could hardly be considered to have been an unalloyed "benefit to mankind." Although this decision may have been an attempt to redress the balance of power in international science, it also reflected the pro-German leanings of Swedish scientists.¹⁵ In 1945, when Hahn alone was awarded the chemistry prize of 1944, the Swedish scientific establishment was painfully shifting its support from the Axis Powers to the Allies, but the old ties with German scientists, many of whom (like Hahn), had visited Sweden during the war, still won out. However, the most questionable prize from this time—if not of all time—was the award to Finland's Artturi Virtanen of the 1945 Nobel Prize in Chemistry for his silo method of conserving cattle fodder. As intended by Virtanen's chief promoter on the chemistry committee, the pro-German Hans von Euler, the prize came to symbolize the survival of Finnish science and culture after the country had been defeated in two successive wars against the Soviet Union, the second one fought with German support. As a Finnish nationalist and newly crowned laureate, Virtanen flaunted his anti-Soviet views and caused problems for the Finnish political leadership.¹⁶

The second category of prizes in which nonscientific influences may have led to questionable awards consists of those awarded to Swedish scientists. With five prizes in physics and chemistry (four of which were awarded to members of the Nobel committees) during the period 1901–45, Sweden is overrepresented when compared to its Nordic neighbors: Denmark: one prize (Niels Bohr); Finland: one

(Virtanen); Norway: none. The most questionable prize was the 1912 physics prize awarded to Nils Gustaf Dalén for his invention of automatic regulators in lighthouses. It was one of the few times when the technologists in the academy of sciences prevailed over the committee's partiality for basic science.¹⁷ Since World War II, however, Swedish scientists have received only two prizes in physics and one in chemistry. It is difficult to say whether this shift is due to the committees' heightened sensitivity to allegations of favoring their own or whether work done in the physical sciences at Swedish institutions is no longer of Nobel caliber.

It is impossible to separate the scientific from the nonscientific influences that have prevented a discovery from being selected for a prize, for in the disciplinary politics that have often governed these selections, the two categories are intermingled. One kind of disciplinary politics concerns committee members' propensity to favor their own fields or research orientations—the most prominent examples being Svante Arrhenius' campaigns for physical chemistry which resulted in prizes for himself and his gang of "Ionists"; The Svedberg's campaigns for colloid chemistry and Manne Siegbahn's for x-ray spectroscopy, which yielded Nobel prizes for each of them; and Carl Vilhelm Oseen's campaign for theoretical atomic physics. As Robert Friedman has shown, the prizes came to represent a symbolic and material resource for Swedish physics and chemistry. An award in a given field not only brought prestige and visibility, it also meant that Swedish scientists in this field could tap new supplies of private and public, domestic and foreign funds.¹⁸ If one also considers the general tendency to reward experimental work and, particularly in the interwar period, a strong emphasis on atomic physics and chemistry, one understands why many discoveries that deserved Nobel prizes in fields such as geophysics and astrophysics went unrewarded.

When the Nobel committees select a discovery for an award, they must review the contributions of all who participated in the discovery. From the beginning, the committees seem to have applied an unwritten rule that only the most senior scientists in a collaboration could be considered codiscoverers. This practice has led to the exclusion of countless younger collaborators, Fritz Strassmann among them. In particle physics, the rule still holds, even though "discoverers" and prizewinners such as Carlo Rubbia (physics, 1984) or Georges Charpak (physics, 1992) may each have been backed up by a "cast of thousands." Although such exclusion is regarded as problematic, few voices have been raised against it in the scientific community. (See John Heilbron's article, "Creativity and Big Science," *PHYSICS TODAY*, November 1992, page 42.)

Nevertheless, the serious evaluation of the claims of senior scientists has been the rule since 1903, when Pierre Curie prevailed on the physics committee to consider his wife Marie for the prize, pointing to her important role in the discovery of radium and polonium. Of course, not all such claims have led to an award. Nevertheless, it is highly unusual for the committees to review the contributions of a senior scientist as extensively as the chemistry committee did in the case of Lise Meitner between 1939 and 1945 without reaching an informed opinion as to whether or not she should be included in the award. It is also highly unusual for a review, such as the one conducted by Hulthén in 1946, not to be based on the established historical record of a discovery. The decision not to recommend Meitner for the physics prize of 1946 was a rare instance in which personal negative opinions apparently led to the exclusion of a deserving scientist.