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‘The winner takes it all?’ Nobel laureates and the public image of science

In 1996, a committee of British experts rejected the application for funding submitted by Prof. Harold Kroto for his research. Two hours later, the Royal Swedish Academy of Sciences issued its own verdict, awarding the Nobel Prize for chemistry to Robert Curl Jr, Richard Smalley and Harold Kroto ‘for their discovery of fullerenes’. The British committee hurriedly reconvened and reversed its decision, this time granting the funding to Kroto. The British chemist, in fact, had now entered the narrow circle of so-called ‘visible scientists’, that elite of researchers on whom awards like the Nobel Prize confer almost unassailable prestige and a reputation able to open every door.

This and related dynamics were described by the founder of the sociology of science, Robert K. Merton, as the ‘Matthew effect’, from the passage in Matthew’s Gospel which states, ‘For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath’ (Matthew 25:29). Those in positions of visibility and prestige will have privileged access to further resources and positions of visibility, and so on. As a Nobel Prize winner for physics put it, ‘The world is peculiar in this matter of how it gives credit. It tends to give the credit to [already] famous people’ (Merton, 1973: 443). Or in the words of Swedish pop band Abba, ‘The winner takes it all’.

Although Merton originally referred mainly to dynamics within the scientific community, several studies have later shown that this effect not only extends to scientists’ visibility in society at large but also amplifies and connects with general media and public discourse dynamics. Thus, the high reputation of certain scientists (as certified by the Nobel Prize and other particularly prestigious forms of recognition) is transformed into a visibility which exceeds the esteem of peers, turning them into all-round celebrities, not dissimilar to sports or media personalities (Bucchi, 2015; Fahy, 2015; Fahy and Lewenstein, 2014; Goodell, 1977; Zuckerman, 1996 [1977]).

Studying the visibility of Nobel laureates in the sciences is an extraordinary gateway for understanding the transformations in the public image of science – and of scientists – throughout the 20th century and also understanding how the Prize itself contributed to shape such image. The Nobel Prize announcements are in fact one of the occasions when science makes global headline news in the media; the halo and reputation of the prize reaching even those audiences which are quite distant and not much interested in science; in fiction – from Hollywood movies to the Simpsons – ‘Nobel’ has become a metonym for brilliant minds, genius and successful science. According to the most recent data of the Science in Society Monitor, a yearly survey of Italian citizens’ perception of and attitudes to science, for example, 85% of Italians actually know what the Nobel Prize is.[1]

As Harriet Zuckerman (1996 [1977]) noted in her book *Scientific Elite*,

> I am inclined to think that the principal effect of the prize on science in the large is indirect; its influence on the public's image of science probably counts for more than its function as incentive for scientific accomplishment. Decades-long reiterated attention to the prizes and the laureates in the public press, to their great achievements and to the ceremony honouring them, announces to the public that great things are stirring in science, things worthy of public admiration and public support (p. xxviii).

Some Nobels are more Nobel than others?

But how has the prize actually contributed to define the way we think about science and scientists? The studies included in this special issue offer several interesting insights to answer this question.

One key element of Nobel laureates' visibility is clearly a dynamic tension between the halo and prestige of the prize itself and the specific visibility of some of its winners.

Whether one looks at media coverage, biographies in national encyclopaedias, public awareness indicators, the result is clear: 'some Nobels are more Nobel than others', that is, some laureates have made much greater impact in terms of public visibility, while others have been almost completely forgotten (Table 1).

For example, in the context of the Italian media and national encyclopaedia, the salience of Renato Dulbecco grows of a factor of more than 100 after the prize (from 4 to 542 articles in the daily press); Carlo Rubbia has 38 citations before and 877 after; Rita Levi-Montalcini was cited 54 times before the prize and 1741 after. Frederick Sanger was totally unknown to the Italian general media before and two Nobel Prizes were not enough to turn him into a familiar figure (four articles, basically only on the occasion of Prize assignments). This only partly relates to the clear tendency to valorise Nobel laureates coming from each country as 'national heroes'. There are, in fact, striking differences among the visibility of national Nobel Prizes. Camillo Golgi, first Italian Nobel laureate in the sciences, had a very short entry without portrait in the National Encyclopaedia first (1929–1939) edition. And only 20% of Italians correctly recognise the names of Giulio Natta and Emilio Segrè as Nobel Prize winners (Bucchi and Saracino, 2017). Similar conclusions were reached in Denmark by Nielsen and Nielsen (2001). Likewise, some laureates acquired great notoriety also outside of their own countries, while some remain largely forgotten.

Table 1. Articles citing Nobel laureates in *Il Corriere della sera* and National Encyclopaedia Entry (NEE) before and after the prize.

Nobel laureate	Field	Year	Articles citing before Nobel	Articles citing after Nobel	NEE before Nobel	NEE after Nobel
Rita Levi-Montalcini	Medicine	1986	54 (+NEE)	1741 (+NEE)	Yes	Yes
Carlo Rubbia	Physics	1984	38 (−NEE)	877 (+NEE)	No	Yes
Renato Dulbecco	Medicine	1975	4 (−NEE)	542 (+NEE)	No	Yes
Frederick Sanger	Medicine	1958, 1980	0 (−NEE)	4 (+NEE)	No	Yes
John Bardeen	Physics	1956, 1972	0 (−NEE)	15 (+NEE)	No	Yes

Table 2. Scientists and visibility in relation to the Nobel.

Already visible before the prize	Einstein, Marconi, Marie Curie
Become visible after the prize	Dulbecco, Watson, Crick
Not so visible even after the prize	Golgi, Bardeen, Curl, Wilkins

Why then, are some Nobels more Nobel than others? It is difficult to give a straightforward response. One should in fact take into account how the prize itself interacts with other dynamics and factors of visibility. Very schematically, we could divide Nobel laureates in the sciences into three broad categories: scientists who were already famous before the award (i.e. 'those who have given to the prize, in terms of visibility, more than they have received'[2]), those who have become famous following the award and those who have largely remained very little known to the general public even after the prize. Table 2 briefly summarises these ideal types, citing some cases as examples.

Among the factors contributing to the visibility of a Nobel laureate one could mention,

- Nationality, national identity;
- Type of discovery related to the prize;
- Personality, private life and even physical appearance;
- Active participation in public debate, as well as in occasions and themes well beyond their domain of expertise. This can include success in popularisation (e.g. Alexis Carrel, Jacques Monod, James Watson);
- Possibility for the media to overlap some salient issues/debates to the laureate figure, for example, brain drain, research investments, women in science (e.g. Rita Levi-Montalcini in Italy, Takaaki Kajita in Japan).

Popular narratives of the scientist

Another important way in which the Nobel Prize contributed to shape the public image of the scientist is through the three main popular narratives which characterise the prize and its public dimension: *the narrative of the scientist as genius, the narrative of the scientist as national hero and the narrative of the scientist as saint*.[3]

The narrative of *genius* emphasises the creativity of the scientist, his intellectual exceptionality that reflects a solitary and romantic ideal of great communicative impact. The narrative of the *national hero* allows the scientist awarded the Nobel to speak in the name of a nation, surrogating and sublimating in a more pacific and noble competition the tensions and rivalries among nations. The narrative of *saint incarnates* (also in a literary sense, since the body of the scientist, or more often, its disembodiment, becomes a focus of attention and worship, celebrated and consecrated through the elaborate prize ceremony ritual) the moral exceptionality of the scientist, updating the traditional ideal of the man of science as a secular ascetic. Media and popular representation of Nobel scientists abound of comparisons to the most elevated religious figures, beginning with the famous definition of Enrico Fermi as 'the Pope of physics'; Maria Goeppert, Nobel laureate in physics 1963 for his description of a series of shell structures, akin to an onion layers, became known as the 'Onion Madonna'; The new London mega-laboratory directed by medicine Nobel Prize Paul Nurse is referred to as 'Sir Paul's cathedral'; and then obviously Einstein, 'the new Messiah, the First Knowledgian and the Supreme Head of the Vast Physical Universe' (Regis, 1987: 20). Personal objects and scientific instruments symbolically embodying the capital achievements of laureates are preserved and displayed: the Nobel museum in Stockholm, for example, has on exhibition the microscope used by Medicine laureate Ramón y Cajal, salt containers owned by chemistry laureate Georges de Hevesy and even the sample jar from which Nobel laureate in medicine Barry Marshall drank the bacterium *Helicobacter pylori* to prove that such bacterium actually causes gastric ulcer.

This practice connects with a broader and traditional 'civic cult of saints' which has grown particularly since the mid-19th century and has found expression not only in the dedication of

monuments and statues but also in the preservation and display of scientists' body parts as relics (Beretta et al., 2016). In analogy with what was once done with the names of saints connected with the calendar, nowadays websites dedicated to maternity offer to future parents a series of names inspired to Nobel laureates:

> If your baby is bound for greatness, try starting with a name inspired by one of the world's best thinkers. For more than a century, the prestigious Nobel Prize has recognized achievement in physics, chemistry, physiology or medicine, literature, and peace.[4]

The Nobel Prize–giving ceremony can also be studied as a *ritual* through 'which the person is allotted a kind of sacredness that is displayed and confirmed by symbolic acts'. The central element of such ceremony is *deference* 'by which appreciation is conveyed to a recipient (…) or to something of which this recipient is taken as a symbol, extension, or agent' (Goffman, 1967: 47ff.).

Thus, through the ceremony and the elaborate ritual of the Nobel week, deference is expressed towards the laureate, and through her or him, towards science at large. The dedicated staff and chauffer, the banquets and toasts in their honour, the physical proximity and table sharing with members of the royal family, the prize-giving by the King himself, the medal with its allusion to nobility and civic glory are all part of this ritual that is quite unusual compared to the everyday experience and pre-eminently informal style of scientists. The chemistry Nobel laureate John Polanyi (1986) expressed this ironically during his banquet speech:

> Your Majesties, Your Royal Highnesses, Ladies and Gentlemen, I know of no other place where Princes assemble to pay their respects to molecules.

The ritual element is also amplified by the media dimension of the event, broadcasted live by Swedish state television SVT, with videos and images spreading worldwide. The Nobel ceremony is the type of media event that scholars define as 'coronation'. Like royal weddings, actual coronations, funerals of great personalities, the Nobel ceremony is symbolically centred on the values of 'tradition and continuity'. Through its mediatisation, the tradition of science and the continuity of its social and cultural role is collectively reaffirmed (Dayan and Katz, 1992).

The three narratives complement, balance and reinforce each other. 'In a sacred idiom, scientific discovery is divine inspiration; in a secular idiom it is spontaneous and serendipitous'.[5]

Combined, they define the Nobel Prize as 'the right prize at the right moment'.

In an age when research was already becoming a more complex, organised and unavoidably impersonalised activity, the narrative of the genius allowed individual contributions and faces to be put into focus.

In a historical phase when rivalry between nations was finding peaceful alternatives through occasions such as the Olympic Games and universal exhibitions, and science was beginning to be considered the expression of a nation's power, the prize was an extraordinary opportunity to express *political rivalry through other means*, favoured in part because of its location in neutral Sweden.

In a period when the *moral exceptionality* traditionally attributed to scientists began to be questioned, and research started to be socially defined as a job more than as a vocation, the prize gave a new language to scientific virtues like modesty, humility, total dedication, *body and soul*, to the pursuit of knowledge.

In a research context characterised by the increasingly rapid proliferation, updating and inevitable obsolescence of results, the Nobel Prize allows a few key figures (and the science developments and achievements that they represent) to be fixed in the collective memory and rendered

immortal, eternalising them in a secular pantheon. The balancing of complementary narrative registers – creative and moral exceptionality versus proximity to the daily and mundane dimension – allows the definition of behavioural models which are distant and yet, at the same time, accessible and understandable, at least from the human point of view. For example, themes such as emancipation from conditions of exclusion, or injustice, characterise many of the stories of those who won the Nobel and those who didn't, particularly between the two World Wars.

The elaborate ritual and ceremony, the *royal touch* which consecrates the prizewinner and the 'princes and princesses paying tribute to the molecule', symbolically condense the deference which society and politics bestow on science.

Together, the three narratives also allow a certain interpretive flexibility to their protagonists. Within the broad boundaries of the demeanour expected of Nobel Prize winners, there are *various ways of being a Nobel*, emphasising one narrative over another or balancing the narratives on the basis of the different historical contexts or specific personal trajectories. From this point of view, the Nobel winner as a genius, the Nobel winner as a national hero and the Nobel winner as a saint are ideal types, continuously recombined and re-elaborated within the interpretation by the individual scientists.

The adaptability and flexible combination of the narratives permits each Nobel laureate different forms of interpretation and various degrees of *role distance*, allowing the growing articulation of the scientist's social roles in contemporary society and the different *social circles* of reference: colleagues in specific disciplines, the world of business and technological applications, the media, the general public. In his or her capacity as a focused yet ecumenical narrative, the Nobel Prize winner can be, from time to time (or even simultaneously), a poetic and discarnate thinker, a technological leader, an entrepreneur, a military consultant, a populariser.[6]

This combination of registers recalls that of the Prize's founder, Alfred Nobel: chemist, inventor, entrepreneur, first labelled in the media as a 'merchant of death' and later seen as a benefactor of humanity. Even in its more controversial choices (in fact, perhaps because of them), the Nobel Prize has been able to account for the intrinsic ambivalence of science, whose power and practical implications began to appear just as evident as its cognitive ambitions, starting with the activities of Alfred Nobel himself.

One could of course wonder whether this increasing articulation and plasticity has not become today one of the symptoms of the Prize's weakness. The fragmentation of what we were accustomed to call the 'scientific community'; the diversification of ways to interpret the role of the researcher; the growing porousness and interpenetration of the world of research with other areas, actors and models of activity (such as business, media communication, the mobilisation of citizens and patients) today seem to call into question some of the organisational, social and cultural premises on which the Prize was based. Compared to the famous group photograph of the Solvay Conference in 1927, compact and gloriously crowded with Nobel Prize–winning scientists, the contemporary identity of science seems more unfocused, evanescent or simply impossible to condense into one single image.

The role of the Prize and the Prize winners can also be analysed in the context which has been described as 'the decline of public intellectuals'. According to some scholars, one of the underlying elements of this decline is the growing tendency of experts and academics to comment on topics and matters outside their personal ambit of competence – a characteristic dynamic of the contemporary public visibility of scientists and common to at least a certain interpretation of the Nobel Prize's role.[7]

Thus, a fascinating hypothesis, which needs to be verified, is that the Nobel Prize has become a victim of its own success. By fostering the personalisation and celebrity of its protagonists, the Prize supposedly helped undermine the original foundations of its own identity and reputation,

such as competence. Through exasperated visibility, it too openly negates scientific virtues such as humility and modesty, which are the essential institutional counterpart to the celebration of the individual. The Matthew effect, taken to the extreme, can eventually turn against its own beneficiaries and against science as an institution.

Nonetheless, these contemporary considerations and challenges do not make less significant the role of the Nobel Prize in shaping an image of science and of the scientist which, from a social and cultural point of view, has been – and still is – a key reference point, as the papers in this collection richly demonstrate.

For the general public, science largely remains an abstract and inscrutable entity. The Nobel Prize has helped give it a face and a body, creating a repertory of stories which still deserve to be told. Together with that story which summarises them and makes them all possible; the only intuition which is celebrated every year, the greatest invention of the man who owned 355 patents. Again, in the words of a Nobel Prize winner during the ceremonial banquet,

> We applaud you, therefore, for your discovery, which has made a memorable contribution to civilization – I refer, Your Majesties and our Swedish hosts, to the institution of this unique prize, for which we, in the company of many others, thank you.[8]

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Notes

1. Observa Science in Society Monitor, 2016; see Bucchi and Saracino (2017).
2. For a more detailed analysis of this effect in relation to the case of physicist and inventor Guglielmo Marconi (Nobel Prize 1909), see Bucchi (2012).
3. A more in-depth analysis of the themes presented in this section is available in Bucchi (2017).
4. https://www.babycenter.com/0_baby-names-inspired-by-nobel-laureates_10310045.bc (accessed 20 February 2018).
5. Shapin (2008; 170). The term *serendipity* recalls the accidental nature of various scientific discoveries (see Merton and Barber, 2006). Frequently cited examples are Fleming's discovery of penicillin and the discovery of X-rays by Röntgen.
6. On role distance, see Goffman (1961); regarding the intersection of social circles, see Simmel (1992 [1908]); on the social roles of scientists Znaniecki (1968); Merton (1973).
7. See, for example, Posner (2003). Another factor to bear in mind is that other figures have now occupied some of the space which is traditionally occupied by Nobel Prize winners, for example, the mythologies which have grown in recent years around the protagonists of the digital era (Jobs, Gates, Zuckerberg, Musk), celebrities accorded influence and authoritativeness on broad-ranging political, social and economic topics.
8. John Polanyi, 1986 Nobel Prize for Chemistry, www.nobelprize.org.

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