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Article

Historians of science and the "Sobel Effect",1

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In 1995, journalist Dava Sobel's Longitude caused an earthquake in the history of science community. The present article analyses how only recently historians of science have fully realized the novelty the book represented. In the meantime, the international success of popular books by journalists on the history of science has become a well-known phenomenon. The author suggests that the huge publishing success of Sobel's book – the "Sobel Effect" – has provoked three main kinds of reaction among historians: rejection, detachment, and imitation. Which of the three strategies is the best, for both public and authors?

Keywords: Sobel Effect, history of science, communicating the history of science.

In 1995, a small book published by an obscure independent publisher, Walker & company, triggered off a chain reaction in the sector of the popular literature dealing with the history of science. I am referring of course to *Longitude*, by Dava Sobel.²

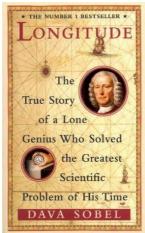


Figure 1: Longitude, by Dava Sobel.

Longitude appeared exactly ten years after the Royal Society, the Royal Institution and the British Association for the Advancement of Science had launched the program called Public Understanding of Science (PUS), a controversial yet important project, well-known to scientific journalists and historians of science today.³

During the Second Conference on Science Communication in Italy, last year, I dealt with the relationships between PUS and historians of science, pointing to what I regard as an interesting precursor to the program: James B. Conant's Tactics and Strategies of Science, developed during the Cold War.⁴ In this paper I shall be dealing with the present situation; that is, with the efforts made by

historians of science – from the 1990s onwards, mainly in response to journalists and science writers – to finally meet the arduous challenge of communicating the history of science to the public.

Historians of science vs. science writers

Over the past ten years, journalists seem to have been the ones to benefit most from the efforts made during the previous decade towards the public understanding of science. As the public reacted positively to some early attempts, journalists created a new professional category, the "science writer". Science writers succeeded in exploiting the most fascinating episodes of the history of science, writing popular books that sometimes even ranked top in the best-sellers' list.

Journalists' books on the history of science have thus contributed to the global increase in the production of science popularisation literature, a genre that underwent an exponential growth in many countries in the 1990s. The nearest parallel in the publishing sector to the recent development dates back to the Victorian period, during the so-called "age of science", when the supply and demand for "science for all" – a genre including some history of science as well – was kept alive by the second Industrial Revolution, colonial expansion, and, above all, the extraordinary scientific, religious, social, and media appeal of the early evolutionary ideas of authors like Robert Chambers, and later Charles Darwin, supported by "evolution's high priest", Thomas H. Huxley.



Figure 2: Robert Chambers (1802-1871).

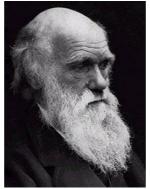


Figure 3: Charles Darwin (1809-1882).



Figure 4: Thomas H. Huxley (1825-1895).

The recent success of the "science for all" literature and events, coming a century after the death of Queen Victoria, has taken place in an equally highly interesting historical moment: the fall of the Berlin Wall; and it seems destined to continue after September 11, 2001. The 1980s indeed - when the PUS was first launched - now seem incredibly far away. At the time, however, people were becoming aware that new political and economic scenarios were becoming possible. The countries that had seen the birth of the Industrial Revolution were already driven by fear of losing their prominence. Western markets were witnessing the arrival of products – including high-tech – from countries such as Korea, Malaysia, and later China. This prompted Europe and North America to rethink their development strategies. With PUS, protestant countries applied the usual, tested recipe when in trouble: involving citizens in new educational and scientific projects. In so doing, they were following an ancient tradition. A similar strategy had been used during the Enlightenment, the Industrial Revolution, and the Victorian age, giving birth to the first extraordinary era of public science. As already hinted at, a similar strategy had been set up again, under the leadership of Conant, during the Cold War.

In fact, in the 1980s PUS projects were launched by the very institutions that for centuries had been the meeting place between politics, industry, scientific research, and the public: the Royal Society, founded in 1660, the Royal Institution, founded in 1799, and the British Association for the Advancement of Science, founded in 1831.

In the 1980s, it was felt that development plans needed renewing, that it was necessary to make new, huge investments in research and education, and new attempts at involving the public. "Democracy" was regarded as the most precious good of the Western world, and the one to invest in after the fall of the Berlin Wall. PUS took off in that optimistic atmosphere. New science centres were opened, while old institutions, such as the Science Museum in London, tried out new experimental sections, such as the Launch Pad. Also in Great Britain, at the University of Oxford, a chair of "PUS" was created, financed by Charles Simonyi, a Hungarian with a PhD from Stanford, the inventor for Microsoft of Word, Excel, and other computer programs, and Richard Dawkins was appointed to it.



Figure 5: Richard Dawkins and Charles Simonyi.

In the meantime, attempts were made to rethink the approach to the teaching of science in schools, in order to rekindle the younger generations' interest, given that compared to the post-war period, fewer and fewer young people were choosing science as a career. The kind of new measures adopted, have since spread throughout the industrialized world, according to context.

In this atmosphere of international enthusiasm towards science and its diffusion, it was a woman, (and not a tall one – as Dava Sobel herself pointed out) who in 1995 wrote the book that exploited the giant PUS-related efforts best, paving the way for a growing number of popular books on the history of science.



Figure 6: Dava Sobel.

The "Sobel Effect"

Between *Longitude* and *A Short History of Nearly Everything*, Bill Bryson's best seller published in 2003, ¹² many successful, popular books in the history of science appeared.

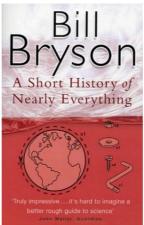


Figure 7: *A short history of nearly everything*, by Bill Bryson.

Longitude was the story of John Harrison, the self-taught horologist who solved the problem of how to determine longitude at sea. Dava Sobel's next bestseller, *Galileo's Daughter*, ¹³ was the story of the relationship between a special father and a special daughter, and was published in 1999. Together they sold many hundred thousand copies in more than twenty countries. They have been reviewed by hundreds of newspapers around the world, and Sobel can boast around 55,000 quotations on the Internet.

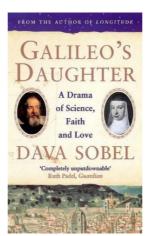


Figure 8: Galileo's Daughter, by Dava Sobel.

Bryson's case is even more astonishing. A well-known travel writer till 2003, he reinvented himself as historian and populariser of science. In barely three years he wrote an 800-page Humboldtian volume, which entwines science and the history of science in a light-hearted style. Bryson's book hit the 2-million-copy mark in January 2004, a few months after its appearance, and the author currently has 290,000 Internet quotations.

To give an idea of the situation in the academic world, it should be noted first that it may take a historian of science some ten to fifteen years to write an 800-page book. Second, the problem is that in Europe – and more or less in the United States as well – a successful academic book may sell on average no more than 1,000-1,500 copies.

The question I want to deal with is: How did historians of science react to the discovery that there are countless readers potentially ready to buy books on the history of science, and that there are a thousand journalists prepared to review them?

It seems to me that there have been three main reactions among historians of science: rejection, detachment, and imitation.

Rejection

It is well known that in the States, where the book market is like a dream to Europeans, journalists are always looking for new topics to write a best seller on in a few months. So it happened that Dava Sobel's *Longitude* brought a field till then ignored to the attention of multitudes of journalists, who hurried to exploit it. Indeed, if it was possible to insert a fair number of allusions to the history of science in monster bestseller bloodbath books such as *Angels and Demons* (2000) and *The Da Vinci Code* (2003) by Dan Brown, it was because history of science themes were no longer ignored by the public, thanks to the so-called "Sobel Effect". A quick look at Amazon Internet bookshop provides overwhelming evidence.

But what about historians? In 2002, reacting to the increase in the production of journalists' books on history of science topics, historian of science David Philip Miller published an essay review entitled: "The 'Sobel Effect': The Amazing Tale of How Multitudes of Popular Writers Pinched All the Best Stories in the History of Science and Became Rich and Famous While Historians Languished in Accustomed Poverty and Obscurity, and How This Transformed the World. A Reflection on a Publishing Phenomenon". 14

Miller was poking fun at popular literature subtitles; but he also revealed, with disarming sincerity, how deep the reaction of the academic world to the Sobel effect could be. Miller maintained that those piles of books, with their often silly subtitles and simplistic content, were dangerous on two counts. First, a number of historians of science, including Miller himself (as he declares), had seen their manuscripts refused by publishers because they were not "Sobel-like" enough. As Miller reminded us, to

face the tenure process a European, like an American or an Australian academic in the humanities, must have a book: it is vital for your reputation, like articles in peer reviewed international journals in the sciences. This means that in countries with a large academic market like the United States, every year books that will have between 100 and 1,000 readers pour into the publishers. Miller argues that if journalists show that even the history of science can sell, provided it has a Sobel-like form, scholars trying to have their manuscripts accepted by trade publishers will find it tougher and tougher.

The second danger has to do with the reader and what she/he expects from books in the history of science. According to Miller, the worst characteristic of popular history of science literature is its indifference towards the collective aspects of scientific enterprise, an indifference which ends up with exalting the individual, heroic dimension of discovery. He has a point: popular history of science literature is indeed often a literature of lone heroes and heroines. It may give the illusion that institutions, and scientific communities, as well as social, religious, gender, ethnic and political influences, and a degree of contingency, play no great role in science, whereas academic history of science during the last twenty years has been showing just the reverse.

Miller then formulates two proposals: to safeguard their own and their readers' interests, historians of science must themselves write good popular books, and they must review Sobel-like books (so far they have mostly avoided taking up the challenge), providing guidelines for the reader.

In June 2004 Miller attacked popular history of science literature again, this time replying to a personal attack. The *Sidney Morning Herald* had published an enthusiastic review of Bill Bryson's *A Short History of Nearly Everything* by the Australian theatre writer and journalist Alex Buzo. The title itself - "Eureka moments for the masses", ¹⁵ sounded indeed like a provocation to historians of science. Buzo's incipit was: "It took me two years to complete a course called history and philosophy of science at the University of NSW. Bill Bryson covers the same territory in a book that takes less than 48 hours to read. Where are these people when you need them?". ¹⁶

Miller, Senior Lecturer at the University of New South Wales, felt involved. He wrote to the newspaper, pointing out that a book on the history of science written by a traveller should not be reviewed by a playwright.¹⁷ Disdaining *A Short History of Nearly Everything* by the factotum writer Bryson, Miller did, however, review a popular book by a colleague, John Waller, *Fabulous Science: Fact and Fiction in the History of Scientific Discovery*, ¹⁸ for the academic *Social Studies of Science*. ¹⁹



Figure 9: Fabulous science: Fact and Fiction in the History of Scientific Discovery, by John Waller.

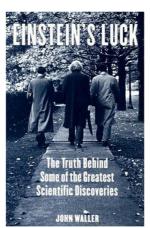


Figure 10: Einstein's Luck: The Truth Behind Some of the Greatest Scientific Discoveries, American edition of John Waller's Fabulous Science.

Miller finds much to commend in *Fabulous Science*: the stories are brilliantly told (though the author only uses secondary literature), and the hero is not unduly emphasized to the detriment of the scientific community. But, in spite of this, *Fabulous Science* does not pass Miller's examination: in the reviewer's opinion, the author's background epistemology is "pre-kuhnian", and there are too few cross-references to constructivist literature. Whether or not Miller is right about Waller's epistemology, his criticism about the too limited range of constructivist literature quoted by a popular book like Waller's seems beside the point. Perhaps popular and academic books simply can't be reviewed using the same criteria: they belong to different genres, with different aims and markets. But Miller feels bound to defend the idea that only professional historians can write literature leading to an "advance in knowledge". As he puts it:

Generally speaking the books generated by the Sobel Effect do not advance knowledge. At their best, they diffuse it in attractive packages. This is in itself a good thing. But it can also have drawbacks... 20

Of course, it's not necessary to have spent years studying the production and circulation of popular science literature over the last few centuries (as I have done) to know its drawbacks. All the same, attacking the phenomenon seems pointless. It will not reduce the writing of bad popular books, or their presence in publishers' catalogues, nor will it help us understand the reasons behind their growing success. I suspect that strong condemnation of popular literature often has no relation to the intrinsic quality of the books under review. Condemnation is partly due to prejudice, for the most part an attempt to defend political, historiographical, academic, or market interests that the experts involved consider to be endangered. Besides, it is no new reaction: it emerged already in the XVII century, together with the figure of the journalist, regarded by scholars as a dangerous rival. Last but not least, the scholars' attitude seems reminiscent of the ecclesiastic origins of their profession, with some professors sincerely assuming that they know better than anybody else what has to be communicated to the public and how.

The complexity complex

Miller and many other historians, including myself, use the term "complexity" quite often. The word occurs frequently in the historians' books, and is mostly absent from journalists' books. I suggest calling what is involved in the scholars' attitude toward complexity as the "complexity complex", a widespread problem for scholars all around the world. The complexity complex has generated excellent academic books, papers, essays, articles and reviews; but it may also be preventing complex-ridden people from recognizing the quality of many popular books. Besides, I think that the competition between different categories of authors can have positive consequences for scholars, journalists, and readers themselves.

Despite their frequent declarations to the contrary, intellectuals suffering from the complexity complex usually write books that the unspecialized reader simply cannot read. With the expression "unspecialized reader", I am not referring to university colleagues studying subjects other than the history of science. I am referring to the real world of people interested in science and its history who work – let us say - in business, politics, the building trade, public health, handicrafts, industry, engineering or show business: in short, the literate population of the industrialized world.

We have to distinguish between different levels of communication, corresponding to different target readers. This is good for science as for any other field of knowledge. A professional writer has the ability to tell the history of science, amuse the reader, arouse her or his curiosity, using and respecting the work of historians – as Sobel and Waller do, although in different ways. At the same time, they will typically leave the more sophisticated interpreting, deconstructing, and contextualizing to professional historians of science. A good popular book may lead the reader to a technical one: this is how the popularization of science works (and how it has worked over the last three centuries, especially among young readers).

We may call a feeling expressed by Georgina Ferry, the journalist author of a successful book on *Dorothy Hodgkin* (and a more recent one on the history of the personal computer LEO):²¹

A historian did once suggest to me (very politely) that by writing Dorothy Hodgkin's biography I had spoiled the ground for a future academic historian who might want to write about her. But I always felt that there was room for another book, if anyone wanted to write it....²²

Professional writers know and can navigate in the publishing market better than scholars: they know that there is room for more than one book on women scientists like *Dorothy Hodgkin*, or for example Rosalind Franklin, the protagonist of another successful "non academic" book translated into several languages.²³

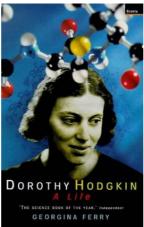


Figure 11: Dorothy Hodgkin, by Georgina Ferry.

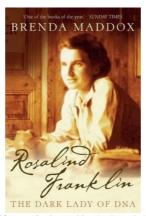


Figure 12: Rosalind Franklin, by Brenda Maddox.

There are different levels of communication, for different readers, or for the different needs of the same reader: industrialized societies, apparently, not only need to "advance knowledge"; they also need "to diffuse it", and possibly (why not?) in "attractive packages".

This point of view may be regarded as cynical, but it is not patronizing. The comparative study of the science/public relationship in different countries shows that, in the long and medium term, the best way to forge stronger ties between education, scientific research, and development has been to allow the free circulation of abundant, diversified information on science throughout society. This does not mean, of course, that the quality of what is communicated to the public is irrelevant; but it is important to be aware that the quantity of scientific or historical information on science being communicated through the media (not just the traditional scholarly ones) is perhaps decisive for the development of some countries in comparison to others.²⁴

Is it possible to draw an identikit of the intellectual suffering from the complexity complex? From my very brief review, it appears that there are no special generational, historiographical, national or political requirements. Yet I suspect gender plays a role: I have found no condemnations of popular history of science books by women historians. On the contrary, it seems to me that generally women historians have an encouraging attitude, especially – and of course? – towards women writing biographies of women scientists. A woman historian of science can hardly be against initiatives aiming to make the public aware of women scientists of the past, not even when the approach adopted by the author is somewhat whiggish or prone to hero-worship: an academic article or a book will easily add nuances or academic restraint, if needed.

In my opinion, the role of gender in the present context is not linked to mere women solidarity (a male notion?). It should not be forgotten that despite the proclaimed desire to protect the reader, and convey the complexities of genuine history, the clash between journalists and historians is mainly about conquering larger quotas of the academic and book markets. Women are weaker in both markets, even though huge improvements have been made since the Second World War. Only in the last few years have women scholars benefited from the "context of citation". Mutual support by means of reviews and quotations is a notoriously ambiguous, yet inevitable measure to force the experts to acknowledge the existence of new actors, disciplines or ideas. Historians of science do not hesitate to use this practice, as Miller reminds us. And of course women dealing with gender issues cannot but be pleased that the public is rediscovering figures like Hodgkin or Franklin. This is even truer in countries like Italy, where the very term gender is still infrequently used. The procedure of the countries like Italy, where the very term gender is still infrequently used.

Should an accurate quantitative analysis confirm that gender plays a role in the story I am dealing with, a sort of "sustainable development" case would probably be revealed, affecting the increasing number of women studying science and the history of science. Sobel confessed that, at first, her publisher advised her to sign *Longitude* with an abbreviation of her name, so that nobody would know that the author was a woman (the publisher then changed his mind, perhaps still hoping that readers would not be aware that Dava stood for a woman). That is what actually happened to the authoress of the Harry Potter saga, the most astonishing editorial phenomenon in the recent past: the signature "J. K. Rowling" was

meant to prevent people from realizing the writer was a woman. Marketing experts apparently thought such knowledge would be likely to put the reader off. Gender plays a role in the scientific world, for sure.²⁸ That it does so also in the publishing world has yet to be demonstrated, but nobody has so far demonstrated that it does not, either.

Detachment

What happens when, instead of debating in the pages of specialized journals, historians of science and journalists writing popular history of science books meet face to face?

They react differently, as I was personally able to observe on one such occasion. The context was the International Summer School in the History of Science, held in Bologna from 29 August to 3 September 2004. The participants were students and scholars – forty-five altogether, from fourteen different countries. The School was established in 1988 in Bologna, to meet every second year in Berkeley, Uppsala, Paris, and Bologna, in rotation. It lasts a week, with lessons in the morning and seminars in the afternoon. Students and teachers are selected among young researchers or PhD students from the best history of science departments. In 2004 the theme was "Current approaches to the history of science", and the aim was to survey the field some ten years after the outbreak of the so-called "science wars". On this occasion, Dava Sobel herself had been asked to deliver the closing lecture.

She followed every activity of the School throughout the week carefully. Sobel is used to talking in universities and academies about the little miracle she has achieved with *Longitude*, and she is very much sought after for that. But Bologna may have been the first time she had spent a full week amongst specialist historians of science debating the most controversial recent trends of their field.

Ever since the first face-to-face meeting with the author of *Longitude*, we were all won over by her genuine interest towards our work, her kindness, especially towards students, and her curiosity concerning our technical lectures and debates. Sobel is in fact an impeccable professional, without any trace of arrogance, superficiality, amateurism or carelessness: only people like us – people suffering from the complexity complex – could be surprised by this. It is clear that she had to possess intelligence and professionalism to achieve success with *Longitude*, then with *The Galileo's Daughter*, and a third time, perhaps, with *Planets*, the book she is still working on, already announced by Amazon.

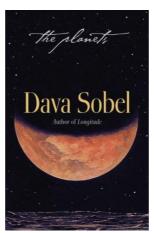


Figure 13: The forthcoming *Planets*, by Dava Sobel.

From one point of view, Dava Sobel's lecture in Bologna was perfect. She did not argue or explain: she simply *told* the story of her books' success, and she succeeded in creating an atmosphere of great emotional participation among the audience, like the one we experience as children when listening to a tale that we may have heard a thousand times already, but that we find compelling all the same. Sobel *told* us how and why *Longitude* was conceived, how she wrote it as an imaginary conversation with her

mother (a sailing enthusiast), and how it unexpectedly became a world best-seller in a matter of weeks. But from another point of view, I found her lecture disconcerting: she completely ignored the week of at times heated discussions she had witnessed, and she attempted no comparison between her work and the historian's. Besides, none of the historians was brave enough to ask direct questions, as had been the rule during the previous days. When faced with her – so good, yet so different – not even the most combative among the historians attending found the right words to open a straightforward dialogue. The only question touching one of the issues that could have been discussed was: "Do you think that the subtitle of *Longitude - The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time* – helped the success of the book?". To most historians present that meant: "Historians of science cannot accept the hero-worship conveyed in your title, which it took us decades to get rid of, and which we would not like to see around again". But the question was asked with so much diplomacy that it lost its strength, and Sobel skirted it skilfully anyway.

A confrontation between Dava Sobel and professional historians of science could not but confirm the different priorities, and the different communication styles adopted by journalists and scholars when interpreting and telling science. Yet, in Bologna at least, the mutual reaction was reciprocal respect and admiration; plus, to be sure, an amount of detachment, from both sides. Sobel proved her talent for telling – easily, pleasantly and cleverly – stories that historians have struggled for decades to reveal, contextualize, analyze, and perhaps overanalyze. As happens when two professionals meet, the reaction on both side was a polite, wise and detached stance; a stance likely to preserve the status quo.

Imitation

In 1969, the then President of the British Society for the History of Science, A. Rupert Hall, published a presidential address entitled "Can the history of science be history?". In it he compared the history of science, a still relatively young academic field, and general history. The comparison included the following remark:

We must, I think, envy the way in which general historians admired by their own colleagues can also command a wide public readership; here we have so far largely failed \dots ³⁰

After this, Hall went back to historiography, and declared:

We should always be grateful to those like Professor Kuhn who remind us from time to time that history of science becomes history in so far as its practitioners think about historical problems, and not about scientific ones. We are even more indebted to those like the late Alexandre Koyré who have combined philosophical penetration with laborious scholarship in order actually to create models of a new historical perspective.³¹

He then concluded:

If with Koyré we study a text page by page it is not in order to define what we learn reading it, but what Kepler thought in writing it. In so far as history of science can begin with that, and then go on to compare and generalize, it is starting to become true history. 32

Thus, Hall seems to have perceived already in 1969 that some of the tensions within the history of science as a field – then associated with the names of Koyré and Kuhn – merged with tensions generated by the scholars' desire to "command a wide public readership."

Thirty years later – after PUS and the "science wars", and when the Sobel Effect was already being felt – John Brooke's presidential address to the same British Society testified, in 1999, the direct, concrete interest of academic historians in non-expert approaches to the history of science.³³

John Brooke admitted that, confronted with popular history of science writings, the expert had often to play the role of kill-joy. While journalists like to focus on the Eureka moments, the most important experiments, heroes and heroines (or, at the least, anti-heroes and anti-heroines), the historian likes to blur black-and-white images, adding a range of nuances. Brooke declared that scholarship and

craftsmanship did not admit compromise; but he also reminded his colleagues that the new attention paid to wider audiences obtained important results, and invited them to cope with it.

Indeed, already in 1997 the British Society for the History of Science had established a biannual prize, the Dingle Prize, for "the best book (in the history of science) which is published in English and accessible to a wide audience of non-specialists". The first Dingle Prize was awarded to *Darwin*, by Adrian Desmond and James Moore.

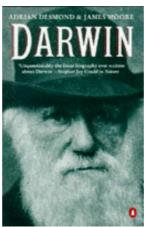


Figure 14: Darwin, by Adrian Desmond e James Moore.

That massive, clever, and delightful biography of Darwin reinforced a sort of "biography effect", and historians of science have since published some excellent biographies, often appreciated by the public as well.³⁵ Notable is the Oxford Portraits in Science series, which exploits the same trend, but at a different communication level: it includes biographies meant for a teenage public, but suitable in fact for an adult readership too. The authors are journalists, as well as well-known academics, like John Heilbron.³⁶

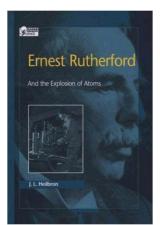


Figure 15: Rutherford, by John L. Heilbron.

In the social history of medicine, the late Roy Porter - himself a "symbol of the democratization of learning" $^{-37}$ showed to experts that he could be read by a wide public without renouncing cleverness and his well-known, pantagruelian passion for primary sources. Porter wrote tens of volumes, some small, such as *Blood and Guts*, some large, like *The Greatest Benefit to Mankind*, always successfully. ³⁸

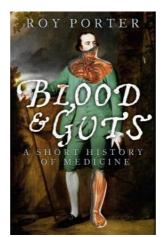


Figure 16: Blood and Guts, by Roy Porter.

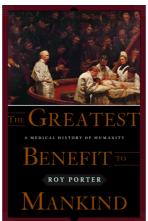


Figure 17: The Greatest Benefit to Mankind, by Roy Porter.

Among other initiatives, Porter promoted a series, The Fontana History of Science (published by Fontana in Britain, and by Norton in the States), that challenged experts to make the history of science accessible to the general reader. The challenge was met successfully by authors such as Lewis Pyenson and the late Susan Sheets-Pyenson.³⁹

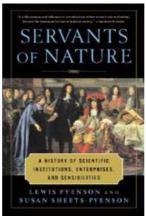


Figure 18: Servants of nature, by Lewis Pyenson and Susan Sheets-Pyenson.

Another famous series is Revolutions in Science, by Icon Books,⁴⁰ which publishes books by professional historians, such as Jeff Hughes, the author of *The Manhattan Project* that won the 2004 Dingle Prize, or by journalist-historians like Patricia Fara, deeply committed to the challenge of communicating the history of science to broader audiences.⁴¹

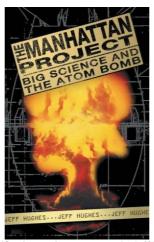


Figure 19: The Manhattan Project, by Jeff Hughes.

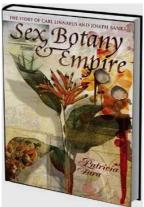


Figure 20: Sex, Botany & Empire, by Patricia Fara.

These are but a few examples, belonging to different historiographical mainstreams, of a third way of reacting to the Sobel Effect: "imitation" (or "competitive imitation") of journalists on the part of professional historians. I believe this is can be a winning strategy, and it may be good for both authors and readers.

Competition

The competition between journalists and professional historians of science can be beneficial on several counts. The challenge will probably end up in the production of more books, requiring different levels of scientific and historical literacy, and representing a variety of historiographical approaches. It will probably force historians and journalists to raise qualitative standards, while curtailing their respective drawbacks: for historians, the "complexity complex"; for journalists, haste and slavish subjection to the expectations of their readers, causing error and whiggish interpretations. To meet the challenge, of course, professionalism will be needed by both groups.

There are historians of science ready to meet the challenge. David Oldroyd, for example, in response to Miller's invitation to review the journalists' books on the history of science, recently published an essay review in *Metascience* devoted to a pile of "airport lounge" books in the history of science. Oldroyd acknowledged some intrinsic values in the books under review, and granted their utility for the history of science. As he wrote:

We want our work to reach out to the wider public, and if popularisers assist in this we should be grateful, not condescending. In fact, popularisation indicates acceptance of the significance of what we do. 42

So, if I conclude by suggesting that academic historians and journalists should learn from each other – more than they seem to be inclined to do – it's not because I do not see their differences; nor is it to please two, quite powerful groups. I think, simply, that the history of science as a field needs the efforts of both professional groups, especially in countries (like Italy⁴³) where academic and book markets are showing signs of a growing appreciation of the history of science.

Sobel's books are good because she made the most of the works of historians of science, but her success is largely due to her professionalism, and to her colleagues who, by reviewing her books, earned them a huge readership, that no review in academic journals can provide. Above all, the success of popular history of science books produced in the wake of the "Sobel effect" can be explained by a rise in demand from the public.

The comparative history of the production and consumption of science popularization in nineteenth century Europe and the United States shows that a major cause for its take-off was a growing demand from the public. It was chiefly the educated, bourgeois public who increasingly realized the importance of science, technology, and medicine in everyday life and wanted to know more about science; exactly as we do today, facing a new, powerful wave in the diffusion of technologies like those that are helping me to write, and help you to read, this article.

The growth of Sobel-like literature, in other words, is not due only to the skills of journalists and publishers, indifferent to the complexities of history. It is due mainly to the demand of readers: in academic circles a crucial yet often neglected circumstance. I do think that the traditional view of a book market working only because people with no scruples give inputs, passively accepted by the reader/customer, does no justice to the current level of scientific and historical literacy among the reading public. I do think, also, that such a public should not be told what they should or should not read, whatever the temptations to do so still widespread in academic circles. To learn how to tell good from bad popular science, or appreciate a good history of science book, should not be the task of some self-appointed intellectual; it is rather a process that each reader should learn at school, as part of his/her becoming an independent citizen in a literate world.

Notes and references

¹ This is a slightly revised version of a paper read at the Third Conference on Science Communication in Italy organized by ICS, Innovations in the Communication of Science, the research group of SISSA, the International School for Advanced Studies, Trieste (Forlì, December 3-5, 2004).

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- ⁴³ Examples of successful popular publishing in the history of science can be found in Italy too. Years ago the magazine *Le Scienze* launched the "I grandi della scienza" series that (in spite of the old-fashioned title) includes some good biographies, written by professional historians, that in some cases have reached thousands of readers. The "Scienza e idee" series, by Cortina Editore, can boast a catalogue of more than 120 titles, mostly translations, including accessible books on science and the history of science, sometimes taken from the Revolutions in Science series already mentioned.

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