

Scientific Biography -- A History of the Genre

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Thank you for inviting me. Glad to be here. I have never been in Göttingen before.

Let me first of all say, that this is a “work-in-progress”-talk. I’m doing research for a book on the history of scientific biography, and I would like to have your comments on the project and on my choice of problems.

The project has sort of grown out of my earlier biographical work -- I wrote the life of a biomedical scientist (the immunologist and Nobel Prize winner Niels Jerne) -- it came out three years ago in Danish -- and hopefully an English version is on its way.

After finishing the Jerne-book, I felt a lack of historical perspective on my own biographical work. I didn’t know much about the history of biographical writing — and I rapidly found out that there hasn’t been written much on the topic.

Well, there are a couple of handful of articles — most dealing with the biographical traditions of a few specific scientists -- like Galileo, Newton, Darwin and so forth.

But there are very few general comments on the history of the genre. And with few exceptions (e.g., Michael Shortland’s and Richard Yeo’s introduction to *Telling Lives in Science*) the literature is pretty unsystematic and anecdotal -- for some reason, biography seems to lend itself to casual remarks --

in contrast to writings about the history of historiography, which are much more penetrating and systematic -- for example Rachel Laudan’s study of 19th century historiography, Helge Kragh’s *An Introduction to the Historiography of Science* or Jan

Golinski's *Making Natural Knowledge*.

I guess that this lack of reflection on the history of the genre is connected with the somewhat condescending attitude that many historians of science have taken towards biography: “No genre of history fell under more odium than that of biography”, says the author of the introduction to the Robert Schofield festschrift in 1990.

But now biography is back in the limelight -- and I think time is ripe for a more systematic discussion of the history of biographical writing corresponding to the works of Laudan, Kragh and Golinski and others.

This lack of awareness of the history of the genre scientific biography becomes even more striking, when you realize how many, and how many good, and interesting, biographies that have been written in the last couple of hundred years.

Before going into more detail -- I should perhaps make a few delimitations:

-- first, when I talk about scientific biographies, I am not only thinking of scientific biography, but also technological and medical biography

-- and I restrict myself to biographies in book form, and only books over a certain size. They do, in fact, come in all sizes — from Karl Pearson's *The Life, Letters and Labours of Francis Galton*, 1914-1930, four 12-inch size volumes — to small leaflets, like the series of 45 page “Brief Lives”, published by Methuen in the 1970's.

So I have set an operational limit to biographies over 100 pages -- which means that I have also excluded innumerable brief biographies -- biographical articles, obituaries, and so forth — in scientific journals, in biographical dictionaries, etc. — although this would be an extremely interesting topic of study in itself.

(By the way, the shortest scientific biography ever published is probably E.C. Bentley's clarihew: “Sir Humphry Davy / Abominated

gravy. / He lived in the odium / Of having discovered sodium”)

-- furthermore, I restrict myself to biographies from the major scientific language areas, i.e., English, German, Dutch and French, plus the Scandinavian language area; I know, for example, that there is a long tradition for biography in Italian and Spanish, but I don't have the language skills to study them.

-- and finally, I take the expression bio-graphy literally, i.e. I don't consider monographical treatments of a scientist's work as a biography. I know that some German authors have coined the term “ergography” for this -- good term. And nor do I look at autobiography -- it is another, very distinct, genre of writing.

All these restrictions can be questioned, of course -- but given these restrictions, we are probably talking about — between 2500 and 3500 biographies, from the early 17th century to the present.

Unfortunately, there is no reliable bibliography of scientific biography. So this is an approximate figure -- based on the holdings of the Science Museum Library in London, and the library of the Royal Society, and the Wellcome Library for the History of Medicine -- together they cover almost everything published in English and what seems to be a “fair” amount of the German and French output, at least in the late 19th and 20th centuries.

I want to stay with the numbers for a moment — you might also be interested in the distribution of these biographies over time:

We are talking about a couple of handful of works in the 17th century -- besides a number of biographical collections, orationes panegyricae, and Leichenreden, and so forth -- there are some rather extensive vitae, like Gassendi's 350-page life of Tycho Brahe from 1654 and *Adrien Baillet's 2 volume La vie de Monsieur Des-cartes*, published in Paris in 1691.

Then in the 18th century we're talking about less than one biography a year -- and then a couple of biographies a year in the first half of 19th century -- growing rapidly to around 10 per year at the end of the 19th century, i.e., in the period when the big life-and-letters biographies set the standards. To take three examples of lf-and-letters:

Jules Marcou's *Life, letters, and works of Louis Agassiz*, 2 volumes from 1896 -- and interesting work, because it is an early attempt to establish strict scholarly standards -- and it expresses a very critical attitude to earlier biographies for being too eulogistic.

A somewhat less critical attitude was taken by René Vallery-Radot in his 700 page *La vie de Pasteur*, published in Paris 1900, translated into English two years later (1902), a book which Wilbur Cross in 1924 meant was one of the few biographies "that a man would sit up at night to read", but which Jerry Geison in 1994 describes as "hagiographic through and through". Evaluations change over time.

And third, Leo Königsberger's monumental 3 volume (over 900 pages) *Hermann von Helmholtz*, published in 1902-03 and translated in abridged form into English in 1906 -- perhaps takes a middle-way -- it is a classical non-analytical, life-and-letters biography, positive to his subject, but not overtly eulogistic, mainly paraphrases Helmholtz's published papers and quotes from

Helmholtz' correspondence.

These three biographies illustrate that the usual label "hagiographic" isn't so simple as some authors today maintain.

The number of biographies rose slowly during the first half of the 20th century -- this period is to my best knowledge a nadir of biographical writing, lots of mediocre works, many drawing on the pioneer life-and-letters of the pre-1914-period.

And then it explodes after World War II -- from around 25 per year in the late 1950s to about 60-70 a year in the last decade (I'm still talking about book-length biographies in English, French and German).

So there are lot a biographies in the libraries out there. Which raises the problem of how to approach this literature. My strategy is pretty straightforward:

First I browse the literature as a whole to identify all kinds of varieties of the genre, particularly with respect authorial intentions and style,

and then I identify some interesting phenomena in these biographies which are worth taking a closer look at.

Let me first give you an overall, kaleidoscopic, impression of the genre -- one of reasons why I work with this project, is the enjoyment of being confronted with all these interesting varieties of the biographical flora.

Take authorship. Quite a few biographies have been written by members of the family -- widows, or sons, or daughters. *Two classical works are:*

Francis Darwin's The life and letters of Charles

Darwin, published in London in 3 volumes in 1887, translated into German by Victor Carus the same year and into French the year after, 1888. It's a classical life-and-letters biography, mainly based on Darwin's correspondence.

And Leonard Huxley's *Life and letters of Thomas*

Henry Huxley, 2 volumes 1900, is not only a classical life-and-letters-biography (although with less emphasis on the letters than Darwin's), but also a nice example of the empiricist methodology and the low-key attitude of the author, that dominated late 19th and early 20th century biographical writing, at least in England:

"So far as possible, I have made his letters, or extracts from them, tell the story of his life. ... Moreover, whenever circumstances permit, I have endeavoured to make my own part of the book entirely impersonal. My experience is that the constant iteration by the biographer of his relationship to the subject of his memoir, can become exasperating to the reader; so that, at the risk of offending the opposite direction, I have chosen the other course"

Memoirs by family members are less common today -- and when they appear, the author is much more explicitly present in the narrative. For example, in Vanda Sendzimir's, Steel will: the life of Tad Sendzimir (1994).

Vanda is a daughter of a steel engineer, but she's also a

sociologist, a feminist, and a journalist. When her 92-year-old father asked if she wanted to write his biography, she felt the challenge “revealing” and “painful”.

She found “his memory sharp for stories from his childhood, and crystalline for the details of machinery, but blurred and superficial as to personal relationships”.

“The task was fascinating, and frustrating” -- Vanda struggled to “elicit honest and heartfelt responses”, but not much seemed to be heartfelt, “his responses about personal matters—his relations with his parents, his disastrous first marriage—were often monosyllabic, and above all unexamined” and finally she gave up: “this male, this engineer, this person most at home in the world of mathematical equations and the laws of thermodynamics, was *never* going to be able to articulate his feelings”.

So she “began to accept him as he was: a man, a man of some greatness and some weakness, who just happens to be my father”.

In this aspect -- as in so many other -- biographical writing mirrors the general values of the culture. Today authors are not only supposed to be present, but to be active constructors of the narrative.

Other kinds of authorship. Some biographies are written by friends. A nice example is *Memoir of Fleeming Jenkin* from 1887 -- an rare example of an engineer’s biography written by a literary man , Robert Louis Stevenson (the author of Dr. Jekyll and Mr. Hyde), who was also a close friend of Jenkin, the engineer.

Another example is Evelyn Sharp’s book *Hertha Ayrton 1854-1923, a memoir* from 1926. She writes:

“since friendship boasts of being stronger than death, there can surely be no more appropriate task for the friend who survives than to reconstruct, however, imperfectly, the life story of the friend who has passed on in advance”

Fifty years later Anne Sayre, in *Rosalind Franklin and DNA* (1975),

similarly delivered an energetic, passionate and wonderfully ironic defence of her old friend against the abominable Jim Watson.

But devoted families and passionate friends apart -- we historians of science are probably most interested in scholarly historical biographies, based on original archival research. Like professor Rupke's book about Richard Owen.

The professional biography comes, approximately, in two versions, corresponding to the old distinction between "internalist" and "externalist" history:

Either the individual scientist is used to cast light on the science, like my Danish colleague Helge Kragh's *Dirac*, or Michael Mahoney's study of the mathematical career of Fermat. There are scores of biographies like these.

Or -- more fashionably -- the biographical subject is used as a cultural "mirror" (Thomas Hankins's expression in a programmatic article in 1979) into the cultural, social, and political context of science. Like Crosbie Smith and Norton Wise's big Kelvin-biography from 1989 or Adrian Desmond and Jim Moore's *Darwin* from 1991. Most academic biographies either focus on the science or on the context.

I am very impressed by these and many similar works. We have seen scores of such biographies here in the 1990s:

David Cassidy's *Uncertainty: the life and science of Werner Heisenberg*, 1992 -- Bernadette Bensaude-Vincent, *Lavoisier: mémoires d'une révolution*, 1993 -- Adrian Desmond, *Huxley: the Devil's disciple*, 1994 -- the two Haber-biographies by Dietrich Stolzenberg and Margit Szöllösi-Janze, in 1994 and 1998 respectively -- Janet Browne's first Darwin-volume, *Voyager*, from 1995, etc., etc.

But we shouldn't forget that biographies such as these -- written by historians of science -- is a fairly new addition to the genre.

Most biographies in the history of the genre, even works that are the result of painstaking, scholarly, original research, have been written by scientists.

One of my early favourites is Archibald Geikie's *Life of Sir Roderick I. Murchison*, the Scottish geologist, in two volumes, 750 pages from 1875 -- it's favourite because it is based on a rich archival material, has a strong narrative flow, and it nicely demonstrates that contextualization is by no means a recent phenomenon, but that a biographer already in 1875 could deal both with the man's personality, his work, and geology at large.

Scientists have continued to write biographies of their predecessors -- or contemporaries -- up to the very present.

And there are some good biographies of this kind: Take for example, René J. Dubos, *Louis Pasteur: free lance of science* from 1950, a widely admired book which has been reprinted several times and was translated into French as late as 1995 -- in his preface to the French translation Bruno Latour refers to it as "la plus interessantes des biographies intellectuelles de Louis Pasteur".

But generally, today, I think rather few biographies written by scientists worth mentioning that are written by scientists. Scientists still write biographies, of course, but they are largely marginal to the development of the genre today -- perhaps with the exception of biographies of scientists working in technically difficult subjects, like mathematics and theoretical physics -- for example, Abraham Pais, *Subtle is the Lord* -- a biography of Einstein -- from 1982 and -- to

take two recent examples: Jagdish Mehra, *The beat of a different drum: the life and science of Richard Feynman* from 1994, and Mehra 's and Kimball Milton's *Climbing the mountain: the scientific biography of Julian Schwinger*, published last year, 2000.

So authorship varies. What about the intended audience?

The modern scholarly biographical tradition I a minute ago -- the biographies written by historians of science, medicine, or technology -- seems to be intended (with a few notable exceptions) to be read by other academic historians.

In other words, these biographies are part of a scholarly circulation which was established only a few decades ago with the rise of an academic community of history of science, medicine and technology.

Biographies written by scientists, particularly in recent years, seem to have only other scientists in mind -- this is particularly true for biographies of mathematicians, which are almost invariably written by other mathematicians for scholarly and higher educational purposes.

The great majority of biographies have been intended for a more general audience. This is true for scientists, who, in the late 19th and first part of the 20th century, wrote for a general audience -- rarely for other scientists. They wanted (and still want) to praise or commemorate a great man (or woman) in the eyes of the public — they wanted to bring public glory to their profession or to the nation — they wanted to inculcate intellectual and moral virtues into their readers — and they wanted to educate and inform a general audience about the wonders and workings of science

Other popular biographies, between the wars and the first decades of the postwar period, were written by novelists who made a detour into the genre of biography.

The novelist-biography writer still exists, but otherwise, and

increasingly in the last 50 years, the popular biography market has been taken over by the professional science writer.

Some of these have been extraordinary prolific, like John Rowland who wrote 15 biographies — The mosquito man, The radar man, The penicillin man, The insulin man, The jet man, The microscope man, The polio man, etc. between 1955 and 1975 -- it's a good party game to guess from the titles whom they were written about. Rowland's books were not based on original research, and they are not very good, but they were certainly a secure source of income both for Rowland himself and for Lutterworth Press.

Another very prolific professional writer of scientific biographies was Ronald William Clark (born in 1916, dead in 1987), a war correspondent who turned to biographical writing and published at least 15 biographies of scientists between 1960 (one of Julian Huxley) and 1985 (*Ernst Chain: Penicillin and beyond*), some of them up to 700 pages.

Some of the most interesting scientific biographies of recent years, in my view, are written by science writers. A good example is Dava Sobel's *Galileo's Daughter* -- by no means an original work -- but it is extremely well-written, and succeeds to balance the life and the work.

A recent German counter-part to the Ronald Clark-phenomenon is Albrecht Fölsing, editor at Norddeutsche Rundfunk, who has written a number of impressive, very well--researched biographies -- of Galileo (1988), Einstein (1993), Röntgen (1995), and last *Heinrich Hertz: eine Biographie*, Hoffmann und Campe, 1997 -- the last two books are based on extensive archival research.

So, serious popular biographies by science writers is a rapidly growing publishing phenomenon -- which underlines the fact that most biographies, throughout the history of the genre, have been

written for a general audience.

However, the fact that biography to a major genre of popular science writing, has not been noticed by those who work on the history of the public understanding of science.

Take, for example, Jane Gregory's and Steve Miller's book *Science in Public*, which came in 1998.

It covers a lot of ground — there is a chapter on science in museums, there are many pages devoted to popular lectures (e.g., those at the Royal Institution in the 19th century) -- they discuss the meetings of British Association for the Advancement of Science, science in popular magazines and in the newspapers, science on television, and in popular science books, and so forth.

But there is not one single reference to biography in the book, neither in the text, nor in the index.

Gregory and Miller's book is no exception. The biographical genre is not part of the awareness of those who study the history of popular science. Which I find somewhat disturbing.

Now a word about biographical series. Most of the biographies aimed at a general audience over the last 150 years have been published as singular works. But surprisingly many, from the 1890s and onwards, have been commissioned works, parts of a series, with series titles such as "Immortals of science", "Famous people, famous lives", "English worthies", "Scientific revolutionaries", "Savants du monde entier", "*Geisteshelden*", etc.

There used to be series for men — "English men of science", "British Men of Science", etc. — now there are also series for women, e.g., "Lives of women in science". Eerdmans Publishing (Grand Rapids, Michigan) right now has a series — "Women of spirit" — which "recounts the lives of extraordinary women in history who have made remarkable contributions to society through their abiding faith in God".

In the last decades, children and adolescents, too, have got their own series: “Makers of Modern Science” describes itself as “a new biography series for young adults ... [E]ach volume depicts the human drama of scientific work, the excitement and frustration of research, and the exhilaration and rewards of discovery”.

And then there is, of course, the Paul Strathern-phenomenon, snapshot-like portraits: *Crick, Watson & DNA*, *Newton & gravity*, *Oppenheimer & the bomb*, etc., and Constable’s “90 minutes”-series written by John and Mary Gribbin: *Halley in 90 minutes*, *Einstein in 90 minutes*, etc. The librarians in the Science Museum Library say that they are mainly borrowed by students who want a “short cut to the science”.

The best-known popular German series was published in the Eastern Germany -- Teubner’s in Leipzig published “Biografien hervorragender Physiker” followed by “Biographien hervorragender Naturwissenschaftler, Techniker und Mediziner” from the 1960s to the late 1980s, with more than a hundred titles in all, and many of them immensely popular, being reprinted 2, 3, 4, well up to 7 times.

I think the Teubner series is an interesting paradox — the official ideology was to downplay the individual in favor of the working class and the state — and yet DDR seems to have been an eldorado for popular scientific biographies. A sophisticated expression of dissent, perhaps?

Some other, and earlier, German series, should perhaps not be mentioned in connection with popular biographies. I am thinking of Wilhelm Ostwald’s “Grosse Männer”, with the subtitle “Studien zur Biologie des Genies”, which carried 12 titles up to 1932, most of them based on original research. After World War II the Wissenschaftliche Verlagsgesellschaft in Stuttgart continued the Ostwald series with a new series of around 50 well-researched biographies, “Große Naturforscher”, most of them original works, too. And there are other, very scholarly German-language series, like

Birkhäuser's "Vita Mathematica".

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When I discuss scientific biography with my history of science colleagues, I get the impression that most of them think of biographies written by historians of science, and that they hardly consider the great number of popular works, not to mention juvenile biographies. The evaluation of the genre among historians of science seems to be based on the normative assumption that our academic history of science ought to be the yardstick against which all biographies of scientists should be measured.

I don't share this normative assumption. Because one should know when one speaks as a critic, and when one speaks as an historian. My position is to treat all these kinds of biographies symmetrically — whether they are written by professionals or amateurs, scientists, novelists or historians, or whether they are expressions of works of love or of professional distance — they must all be considered if we want to understand the history of biographies of scientists, engineers and medical doctors as a genre phenomenon.

In other words, we cannot restrict ourself to the academic biographies. All biographies should be analyzed as elements of a common biographical discourse.

Which, of course, raises the final question. Is it at all meaningful to talk about a common biographical discourse?

By a biographical discourse, I mean that the the historical actors (authors, readers, publishers, reviewers) think and speak in terms of biography as a separate genre — that they defend it, they attack it, they recognize it, they discount it — in a struggle for and against cultural recognition and cultural space for "their" genre.

So what speaks in favor of a biographical discourse?

I guess that the series phenomenon I talked about before reveals that publishers, at least, think of biographies as a genre. And so do librarians when they classify these books in separate biography collections, and bookstores when they sell them from separate biography shelves.

Authors both do and do not think of their work as biographical in a generic sense.

On the hand most authors call their book a “biography” or a “life”, and they refer to it as such in the introduction or preface. Some also comment on their own work, a few even at length, in introductory remarks.

On the other hand, many authors hardly do more than label their work as a “biography”. Historians may they their occasional biography to be read by other historians — and therefore regard their book as history rather than biography. Take for example Robert Marc Friedmann’s *Appropriating the weather: Vilhelm Bjerknes and the construction of a modern meteorology* from 1989. This is by all criteria a chronologically arranged, intellectual biography -- but Friedmann goes to great lengths to avoid using the word “biography”. Friedmann’s book came out of the History of Science Department at Johns Hopkins and I suspect that this is symptomatic of the attitude to biography there.

Similarly professional writers, who switch between writing, say a novel, and a biography, may tend to think of their “biographies” as just another piece of writing. They want to be evaluated as “writers”, not as biographers.

And scientists don't necessarily think of their once-a-lifetime biography as a contribution to a genre either, but rather as an homage to a predecessor or contribution to the understanding of science.

So authors are ambiguous with respect to their contribution to biography as a genre.

Reviewers, too — and this is true both around 1900 and around 2000 — rarely think of biography in generic terms. The typical biographical review -- in history of science journals as well as in newspapers -- only retells and evaluates the life of the subject, as if the review was a brief biography in its own right — and (if the reviewer is an historian) he or she discusses whether this or that biography is good in terms of its contribution to history.

True, sometimes questions about composition, style, readability and so forth are addressed briefly towards the end of the review. But the typical biographical review — and this is true throughout the 20th century — reflects a fairly low awareness of what we could call the poetics of scientific biography — and I believe that this indicates that the review institution as a whole doesn't contribute much to the establishment of the genre of scientific biography.

So, it looks like publishers, booksellers and librarians are eager to construct a genre identity, whereas authors are pretty ambiguous and reviewers tend to de-construct the genre.

Thus, the genre is a floating construction, and we can expect both areas of “thick biographical discourse” and areas of “thin biographical discourse”, and we can expect that the “density” of the biographical field, as I call it, varies between different cultures, between different scientific, medical and technological disciplines, and from time to time.

For example, the biographical field seems to have been rather dense in England and the USA towards the end of the 19th century, and now again in the 1990s. Likewise geology and astronomy

generally seem to have thicker biographical discourses than mathematics and medicine.

These are very preliminary ideas -- I ought to stop here before it all becomes too speculative.

Thank you.