Flaws and Idiosyncrasies in Mathematicians: Food for the Classroom

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Flaws and Idiosyncrasies in Mathematicians: Food for the Classroom?

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Abstract

This paper raises an ethical question: should aspects of a mathematician's personality, political beliefs, physical handicaps, and the ironies surrounding their life be mentioned parenthetically or otherwise in our lessons? What about the political and social norms of the times in the countries in which they lived? There are no hard and fast guidelines on this other than to use good taste; but what is in good taste to one is often in bad taste to another. At the very least this paper presents tidbits of information and innuendo about mathematicians the reader might not know. But hopefully this paper will help the reader develop a personal stance on this issue.

0. Setting the Stage: Ethical Dilemmas

Ethical dilemmas are those gut-wrenching situations that are inescapable in life. They come in different degrees of magnitude and severity–but what they have in common is that they push us to the core of our personal moral beliefs. Each of us can easily think of such situations and decisions we have made in this realm. Some decisions we have made with the authority of certainty; others that to this day we don't know if we acted correctly; and still others that we feel uncomfortable in discussing. But making ethical decisions is a part of life–and sometimes they are not easy to make. Within the university world the arena of problems and situations for which ethical decisions have to be made seems to be unlimited in scope and number. Animal research, stem cell research, genetic engineering, affirmative action admission policies are of one magnitude; accepting grants from individuals and foundations with tainted histories, grants with strings attached, researching sensitive topics such as terrorist profiling, ethnic profiling, etc., are of another magnitude. Universities often have ethics committees to oversee such dilemmas. Ethical dilemmas exist on large, small, and personal scales–even in the mathematics classroom.

1. Introduction

Following are vignettes that reveal flaws in character and idiosyncratic behavior within some of the best-known individuals in the annals of mathematics. They focus on the mathematician's foibles, but the stories also give us a glimpse into the political atmospheres of the times in which they lived. On the surface, mentioning them in the classroom adds a bit of spice to our lessons,

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but in adding that spice are we not tacitly endorsing gossip and stereotypes, and taking on the role of being a bully by smirking at those with paranoia and differences, be them real or imagined? Should such peripheral material about the lives of mathematicians be included in our lessons? This paper discusses this question on both an individual and larger scale.

2. A Sampling of Vignettes

2.1 Girolamo Cardano (1501-1576) is famous for the formulas that bear his name; formulas that enable us to solve cubic polynomial equations (of the form $ax^3 + bx^2 + cx + d = 0$ where a, b, c, and d are integers) in terms of their coefficients. (Just as it is possible to construct formulas to solve quadratic equations in terms of their coefficients, so it is possible to construct formulas for cubic equations. Actually, the coefficients need not be restricted to the integers; the formulas Cardano built also work if the coefficients are complex numbers.) Cardano is also famous for fundamental work in probability theory, and he is considered to be one of the first to have systematically studied games of chance. But Cardano and his associates stole the formulas for solving the cubic equations from a man called Tartaglia (the stutterer), by duping him into revealing them after making a solemn pledge to him that they would be shown to no others. In 1545 Cardano published the formulas in his book the Ars magna, and as you might have guessed, there is no mention of Tartaglia's name. This seems to be one of the first documented cases of intellectual thievery in mathematics. Cardano has been called one of the most wicked and eccentric men in the history of mathematics, for it is said that once in a fit rage he cut off the ears of his younger son; it is also said that he died by his own hand to fulfill an earlier self-calculated prediction of his death date, least it be said that he made mistakes in his calculations! (Ball (1960), Eves (1964)).

The above revelations usually generate a few smiles from students, but in fairness it should also be mentioned that we don't know if any of the above is true. Orestin Ore, like Ball and Eves, also an accomplished mathematician in his time, claims that Cardano died peacefully in his sleep, and that he is unfairly portrayed as a wicked man rather than as one with idiosyncratic behavior. Although Ore does not deny the story of Cardano stealing the formulas for solving cubic equations, he paints Cardano as an eccentric genius who was more like Dennis the Menace, than Ivan the Terrible (Ore (1953)). But with respect to numbers, more mathematical historians seem to line up with Ball and Eves than with Ore (see for example Burton (1991), Cajori (1980), Katz (1992), and Stillwell (1989))[2].

2.2 Isaac Newton (1656-1742) is a name that is known in most households throughout the educated world. Newton is famous for the development of the calculus, and for many of the laws and notions in school and undergraduate-level physics. Recently however, it has been hypothesized that Newton suffered from Asperger's disease, which is a form of autism (Mirsky,

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[2] Here is how Ore (op. cit.) described the conflicting impressions: "Cardano's character was an enigma to many of his contemporaries and it must be admitted that it has remained so to most of his biographers through the centuries which have passed. He is a man who has been praised and vilified; by some he has been called a genius, by others a poseur, some have presented him as a benefactor to mankind, others frankly believe him to be an evil spirit, indeed, a monster. One should expect that the analysis of his works would eventually bring a satisfactory clarification, but unfortunately his books can give some support to almost any view."

(2005)). Newton was emotionally frigid, actively discouraged human contact, was known to laugh only once in his life (when a colleague asked what use Euclid could be), and died bragging that he was a virgin and thus uncontaminated (Green (2005)). Newton's name is attached to the saying: If I have seen a little further than others it is because I have stood on the shoulders of giants. But that saying has been found in written form nearly 500 years before Newton was born–he was certainly not its originator, although he is probably the most famous person to have ever said it. The phrase can be seen, for example, etched into the widows of the Chartres Cathedral outside of Paris, that was erected in the year 1195 (Pappus, (1999)).

Newton was secretive and his behavior irascible; he had difficulty handling criticism and he carried grudges to the extreme. It seems that he was a very difficult person to be around. Some historians attribute Newton's peculiar and exasperating behavior to the fact that he was also an alchemist, and that he often handled mercury which is known to affect behavior in ways similar to the descriptions that we have on him; in other words, his Scrooge-type personality was brought on by himself and perhaps caused the nervous breakdown that he suffered at the age of 37 (Johnson and Wolbarsht (1979)). Undoubtedly Newton was a genius; but he seems to have been a genius with serious social problems[3].

2.3. Albert Einstein (1879-1955) is also a household name; but there seems to be some question as to the role his first wife Mileva Maric played in his landmark papers on the theory of general relativity. They met in their student days and they married in 1903. In letters released in 1986 by Einstein's grandson there are statements that clearly show that Einstein and Maric corresponded on scientific topics during their student days, and also after they were married in that they lived apart for a few years. In the letters are statements referring to our work, our theories, and our investigations. Moreover, an editorial assistant claims that the original landmark papers of 1905 carried the names of two authors on them: Einstein and Maric (Pais, (1992)). But the original papers have long been lost, and in Einstein's divorce settlement from Maric it states that if he was ever awarded a Nobel Prize, the prize money should be given to her; he was awarded the Nobel Prize in 1921, and the money went to Maric (Isaacson, (2007)). There is quite a bit of convincing evidence that Einstein was dyslexic. West (1991) and Whitrow (1967) document quite a few of the common signs and specifically discuss Einstein's propensity toward them; he had poor verbal memory, he was weak with foreign languages, his early childhood shows learning problems in school, etc. Mirsky (2003, 2005) goes even further by strongly suggesting that Einstein, like Newton, suffered from Asperger's disease. In building his case he sites the work of a researcher at Cambridge who claims that the common markers of Asperger were there: obsessive focus on a subject of interest, poor relationships, communication difficulties, etc. As in the case of Cardano, no one knows if any of the above is true, even though hundreds of papers have been written that speculate on his relationship with Maric, and his alleged dyslexia. At the very least, there are gray clouds over Einstein's image, and most students, as well as the general public, are unaware of them[4].

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[3] History has often attributed theorems, proofs, ideas and statements to individuals who had nothing to do with them. See Ezra Brown's article "Whodunit?" in Math Horizons (April 2007, p. 24.) and on a broader landscape: The Dictionary of Mis-information by T. Burnam, (Crowell Publishing Co., NYC, 1975) and Serendipity: Accidental Discoveries in Science by R. Roberts (Wiley Sons, NY, 1989).

[4] There are so many entertaining stories about Einstein that one could tell them all day. But one or them that I like is when Einstein, who had the popularity of a rock-star, advocated civil disobedience as a

2.4. Kurt Gödel (1906-1978) shook the mathematical world to its very foundations in 1930 by proving that in every sufficiently complex axiomatic system, it is always possible to construct a statement that cannot be proved true in the system, nor can it be proved to be false. In other words, there will always be open questions. It was once thought that Fermat's Last Theorem, that $a^n + b^n = c^n$ has no non-trivial solution for integer values n greater than two, was an example of this; but in 1995 Andrew Wiles showed that Fermat's Last Theorem was indeed true. Many other easily stated problems and questions are now given as examples of being intractable in the spirit of Gödel. E.g., are there infinitely many twin primes (prime numbers that differ by 2); Goldbach's conjecture that every even number can be written as the sum of two odd primes; and the rule of three. (If n is even, then send n to $n/2$; and if n is odd, then send n to $(3n + 1)/2$. The conjecture says that the above rules will eventually send every positive integer to one. E.g.,$5 \rightarrow 16 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$, but so far, no one has proved it.) Much has been written about Gödel's paranoia, but one of them did him in; he thought someone was trying to poison him and so his way of handling this was to stop eating; he did, and about two weeks later he died from voluntary starvation (Krantz (1990); Goldstein (2005)).

2.5. Andre Bloch's (1893-1948) name is encountered in many different fields of mathematics. He did fundamental work in the areas of function theory, number theory, geometry, algebraic equations, and kinematics. But he made his discoveries working in a world far removed from normality. In 1917 he was having a quiet dinner with his brother, aunt and uncle in their family apartment; for some incomprehensible reason, he rose during the meal and murdered each of them! He then calmly went into the street, stopped the first police officer he saw, and confessed what he had done. Bloch spent the next 31 years of his life in a psychiatric hospital, pushing back the frontiers of mathematics (Cartan & Ferrand (1988)).

2.6. Ludwig Bieberbach (1886- 1982) and Oswald Teichmüller (1913-1943). The Bieberbach Conjecture was concerned with certain transformations of the unit disc into other planar regions. Such transformations are called univalent transformations or univalent functions; they distort shapes but they preserve angles between curves. Univalence means that two different points are never transformed into the same point. A point on the unit disc can be represented by a complex number z, and a univalent function f transforms z into f(z).This function has a Taylor polynomial expansion $f(z) = z + a_2 z^2 + a_3 z^3 + \cdots$; where the coefficients a_2, a_3, a_4, etc. are fixed complex numbers.

Bieberbach conjectured that for all such functions f, the Taylor polynomial is such that for each coefficient a_n, $|a_n|$ is not greater than n. He posed this conjecture in 1916 and it remained an open question until 1984 when Louis de Branges proved it to be true. It is widely acknowledged that Bierberbach played a major role in the development of univalent function theory. He also

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legitimate form of protest. The Chicago Daily Tribune wrote: It is always astonishing to find that a man of great intellectual power in some directions is a simpleton or even a jackass in others (Isaacson (p 528), op. cit.). In this spirit, Einstein loved sailing; he had a small sailboat and he often went out alone. There are many stories of him getting lost while sailing, on getting caught in rough waters at the bay of a storm, etc.– and help had to be sent to rescue him. But although Einstein was an avid sailor, he had never learned to swim–and he never wore a life-jacket–even when he was sailing alone. Is this rational behavior from one of the world's smartest men?

played a major role in spreading hatred toward Jews and in helping German Universities take gigantic leaps into the world of bigotry and prejudice. His philosophy simply put went like this: individuals of different races should not mix; Jewish professors should not teach German students, and German professors should not teach Jewish students. Even after the war Bieberbach denied that the Holocaust had existed, and that Germany had committed atrocities against humanity during it. The scientific world went crazy over Bieberbach's notions, but history shows that he succeeded in getting German academics to adopt the notion of "Aryan"[5] mathematics, a society that was void of Jews. There is a quote attributed to Einstein showing how deeply his mistrust and suspicion ran with respect to the Germany people at that time. If relativity is proved right, the Germans will call me a German, the Swiss will call me a Swiss citizen, and the French will call me a great scientist. If relativity is proved wrong, the French will call me a Swiss, the Swiss will call me a German, and the Germans will call me a Jew (Schwartz and McGuinness (1979); a deep analysis of Einstein's feelings in this realm can be found in Isaacson (2007)).

Teichmüller, on the other hand, is remembered for original contributions to the theory of Riemann surfaces, and there is a theory dealing with the moduli of Riemann surfaces that goes by his name (Boos-Bavnbek, (1995)). But Teichmüller too was unashamedly an anti-Semite. When Teichmüller was 20 years old he headed a mob of brown-shirts that refused to let Landau[6] enter an auditorium at Göttingen to teach a calculus course; he told Landau that the students did not want to take instruction from a Jew. There are pictures showing Teichmüller lecturing his own students dressed in full Nazi regalia (Shields (1988), Mehrtens,(1987, 1989)). Teichmüller was instrumental in not only destroying the great mathematician Landau, but he also played a major role in destroying the great mathematical center at Göttingen (Chowdhury, (1995)). However in recent years, a movement seems to be cropping up to whitewash his image, and those of his kind. And how is this done? Simply by ignoring the Nazi aspects of their lives, by pushing their mathematical accomplishments, and by staying mum about their beliefs of Aryan/Germanic superiority and of their attitudes and behaviors towards those of other origins (Boss-Bavnbek, (1995)). This is all part of a dark chapter in the history of mathematics for it wasn't just one person going crazy, much of Europe was going crazy at the same time. Worse, this anti-Semitism seems not to have been confined only to Europe. Evidence is surfacing that it ran deep in the United States too, but in more subtle forms. It appears that leading mathematicians in the States were blackballing Jewish immigrants fleeing Nazi Germany from obtaining employment in major universities. Specifically, George David Birkhoff at Harvard, one of most influential

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[5] Editorial Note: The word "Aryan" as appropriated and abused by the Nazi's to distinguish/label the Germanic race as the "master" race and perpetuate horrific atrocities on the Jewish people has a benign existence in the Eastern world for over 3500 years. In the domain of philology as well as contemporary linguistics, Indo-Aryan is a branch of the Indo Iranian languages. In Sanskrit and Avestan (old Persian), the word *Arya* which has been in existence for over 3500 years is not a racial designation but a term of respect, meaning "honorable" or "noble".

[6] Edmund Landau was a child prodigy who completed his doctorate in number theory (under the supervision of Georg Frobenius at the University of Berlin) at the age of 22; two years later he completed his "habilitation" in the area of analytic number theory; he was mostly interested in the distribution of prime numbers. He succeeded Hermann Minkowski at Gottingen and he was known as being both an outstanding teacher and an outstanding researcher. But after his confrontation with Teichmüller, he never again lectured in Germany.

mathematicians in the States at that time, led a campaign to block Jewish mathematicians from major universities. Names, charges, and counter-charges can be seen in MacLane (1994)), but the story seems not to have ended in the 1940's. This type of blackballing seems to have continued into the late 1980's and 90's against the Jewish-Russian mathematicians fleeing the Soviet Union, with similar charges and countercharges being thrown by those on each side of the issue (Sdravksovska, (1989), Birman, (1992), Axler (1992), or simply type "anti-Semitism and mathematicians" into Google, or some other search engine).

2.7. Alan Turing (1912- 1954). Without a doubt Alan Turing helped England and its allies win World War-II. Turing was the head of a team that cracked the Enigma code that led to Hitler's defeat, and Turning machines are now studied as part of the mathematics curriculum in most universities throughout the world. Books and plays have been written about his genius, but there is also a dark side to his story. Turing was a homosexual and one night in 1952, he picked up a young man on the street and took him home to bed. Not long afterwards Turing's house was burgled, and he suspected the young man. Turing went to the police with his suspicions and in telling the story he revealed to them that he was a homosexual. But homosexuality was against the law in England in those days and the police arrested him on the spot. He was sent to trial and he was convicted of England's indecency act; he was forced to undergo hormone treatment that made him obese and impotent. He became severely depressed and on July 7, 1954 he went to his bedroom carrying an apple and a jar of cyanide solution. He was found dead the next day (Davis (1987), Singh,(1999), Whitemore (1991)). Some say that the icon of Apple Computers is a tribute to Turing and his genius. Many honors carrying his name have been recently established. The Turing Prize is often considered the Nobel Prize of computing, and many universities around the world have buildings and rooms named after him.

3. Enlarging the Lens
The above list of vignettes could easily be expanded, but I believe that the point is clearly enough stated: do such stories belong in the classroom? Should students know that Euler lost the sight in his right eye at the age of 30; that he lost the sight in his other eye at the age of 63, and yet completely blind, he continued to produce an average of one mathematical paper per week (Dunham, (1999))? What about that Wronski ended up insane (Agnew (1960))[7]; that the famous John Horton Conway often lectures barefooted; that Einstein often wore shoes without first putting on socks, that Ron Graham (former president of the AMS) often does a handstand in the middle of a lecture–or starts juggling oranges and other objects at will during his lectures? What about the fact that Erdös had no home, and that he simply roamed the world looking for individuals with whom to do mathematics that were willing to take him in? What about the controversy between Erdös and Atle Selberg (a permanent member in the Institute of Advanced Study at Princeton) over the ownership of a theorem surrounding the Riemann Hypothesis; two

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[7] Josef Höené Wronski (1778-1853) was named Josef Höené at birth, but he took the name of Wronsk after is marriage in 1810, and from that point on when writing papers, he used the name of Höené Wronski without a first name. He is mostly known for his work in the philosophy of mathematics, although he also did some fundamental work in differential equations. The Wronskian of n functions u_1, $u_2, \cdots, u_n$ is the determinate of order n which has these functions as the elements of the first row, and their k^{th} derivative as the elements of the $(k + 1)^{st}$ row ($k = 1, 2, \cdots, n - 1$). The functions are linearly dependent on an interval, if and only if, the Wronskian is zero on that interval.

men in the mathematical community who are known for their modesty, who didn't have a vain bone in their bodies, and who were academically generous to a fault–how could a controversy crop up between them; but it did (du Sautoy,(2003)). What about John Nash (a mathematician who won a Nobel Prize in 1994 for work he did in game theory) being schizophrenic, and that one of his sons, who also has a doctorate in mathematics, is schizophrenic too? Should students hear such things from us in our lessons?

Every discipline has such tales and tidbits of gossip and intrigue. Should teachers bring up the physical infirmities of Stephen Hawking (of black hole fame in physics), or the irony that Beverly Sills, one of the foremost divas of the Metropolitan (NYC) operatic stage, has children who are deaf and who have never heard a single note their mother has sung; What about the fact that Beethoven was deaf; that it is said that Paul McCartney (the former Beatle who recently wrote an opera) cannot read music, or that Mozart seems to have been a musical genius through whom some say God spoke, but who was a scoundrel in real life. Every field, yes every field, has such stories.

Here is how E.T. Bell addressed this topic in his classic book: Men of Mathematics; Another characteristic calls for mention here...several have asked that I address the sex lives of great mathematicians. In particular these inquirers wish to know how many of the great mathematicians have been perverts–a somewhat indelicate question, possibly, but legitimate enough to merit a serious answer in these times of preoccupation with such topics. His answer was: None. (Bell continues on saying that the majority of mathematicians were happily married and that they brought up their children in civilized and intelligent ways (Bell, (1965)). Bell's answer seems to be flippant for the point of expediency; he simply didn't want to address such questions, taking the stance that mathematicians are on average, no different than anyone else–except of course when it comes to mathematics. But if Bell is correct, the above vignettes show there are more than a few anomalies around. The question is, should such aspects of their lives be mentioned in the classroom? Knowing that there were laws in England in the 1950's that forced the police to arrest Turing is, I believe, important for it shows how English society at that time looked at homosexuality. Admittedly Turing brazenly flaunted his homosexuality, but still, it was English law that drove him over the brink; a man who assuredly helped England win the war and on whom the English government had showered much praise and appreciation. Does knowing about Turning's homosexuality detract from our appreciation of his mathematics, or does it add a subtle dimension to it?

Anglin (1992) claims that there are many ways to present mathematics and its history. He approaches this topic by asking a series of questions. Several of them are: Should a history of mathematics revolve around individuals and their private lives? Or should a history of mathematics be organized in terms of nations or races? Or should a history of mathematics be told in terms of chronological periods? Whichever way is chosen for presenting the history really isn't of much interest to us, because we are simply asking if such things as Newton's alleged virginity should be mentioned in the classroom, or Bloch's murdering his family, or Turing's homosexuality, or the fact that many mathematicians seem to have spent time in mental institutions? Should we only mention the positive? E.g., that Euler did wonderful mathematics even when he was completely blind; that Solomon Lefschetz (chairman of mathematics at Princeton) lost both of his hands in a chemistry experiment in his youth; that ended his hopes of becoming a chemist–so he became a brilliant mathematician instead; or that Norbert Wiener was terribly insecure in most areas of life, but that he was gigantically successful as a mathematician? I have posed these questions to colleagues and I have received responses covering the entire range

from an emphatic and emotionally delivered no, we should only address their mathematics and not the stories around them, to an emphatic yes, the stories make the mathematicians all the more human.

The general consensus of opinion is that teachers should: i) know the above and other similar stories but ii) only present to students those with which they themselves feel comfortable in discussing. But it seems that even here–with this practical guide of doing that which one feels comfortable with–there are problems. Why? Because by ignoring the distasteful, history is going to be distorted, and that doesn't seem to be right. Let me explain.

4. Discussion: A Personal Bottom Line
I have argued that each of us should be aware of the above vignettes and of the many other similar stories that are easily accessible to us in the literature– and that we should use our discretion in presenting them to students. Mentioning that Einstein often went without socks, and when he did wear them he sometimes put them over his shoes, that he liked to study barefooted with his feet in cold water because he thought it helped him concentrate, that he was often forgetful to the point of being comical, etc., is fine with me. It is also fine with me to mention his alleged dyslexia, for I believe that his accomplishments become all the more astonishing, and that it drives home to students the fact that dyslexia and intelligence are two distinct and independent phenomena; as are physical infirmities and intelligence, as well as sexual orientation, and political beliefs and intelligence, etc. But I admit that although there are many things I do not feel comfortable in discussing, they cannot be left unsaid. Let me start with the Nazi business of Bieberbach and Teichmüller by relating a story about the music of Richard Wagner in Israel.

In Israel, my country, the music of Richard Wager is not played in public; it is not played on the radio and it is not played in public concerts. As far as the older Israeli public is concerned, Wagner did not exist–or at least they wish he hadn't. Why? Because Wagner was a rabid anti-Semite; Hitler claimed that Wagner's music inspired him, and Jews were marched to their death in the concentration camps during WW-II listening to Wagner's music being blasted over loudspeakers. That was more than 60 years ago, and still his music is boycotted in Israel, at least in public. There have been many conductors who have argued that it is time to bury the past–and they have scheduled Wagner into their programs –but fisticuffs have often broken out within the audience between those in favor and those opposed to listening to Wagner, and fisticuffs have even broken out between the members of the orchestra during rehearsals! Even when it is well advertised that Wagner will be played and that some patrons might want to skip that particular concert, well organized demonstrations meet the concert-goers outside the concert hall, and perpetrators are often planted in the concert halls who are bent to do their utmost to stop the concert before the first note of Wagner can be heard. But within the academic musical world in Israel, Wagner most certainly does exist; his music is studied, and so is his goal of trying to unite drama, art, and music into an art form larger than its constituent components. Wagner's political beliefs and the inspiration his music gave Hitler are not generally discussed in the music academies, although most pupils in this country are well aware of them. But should the same turning of a blind eye be done when speaking about Bieberbach and Teichmüller and their mathematics? On a general level, I don't know the answer to this, and I feel very uncomfortable in discussing this nasty business. On one hand, I want to take the easy way out and simply ignore it all; but I know that these men hurt many individuals, and the evil they did to them should not be whitewashed. Smart people in one domain sometimes do stupid things in other domains.

Bieberbach denied that the Holocaust existed. In today's Germany he would be brought to trial for speaking such beliefs (Haaretz, 2006). Birkhoff has been accused of anti-Semitism and so has Shafarevich. I think it is wrong to ignore their activities in this domain, and to let history portray them, through omission, as being more humane and understanding then they were. So in the classroom I have taken the stance that one's mathematics should not be divorced from other aspects of their life, or from the political and social atmospheres of the times in which they lived. I don't dwell on it, but if a person was a murderer, or a scoundrel, or an anti-Semite, or if he overcame some mental or physical malady, I believe that it should all be mentioned to our students. Knowing such stories will not only enrich our lessons, but they will hopefully influence our students to emulate the good and to despise the bad. Life means interacting with others, and this applies to mathematicians too; knowing the flaws in character and the strengths and weaknesses of the individuals whose mathematics we teach, can only help our students to think and reflect, and that is what our profession is all about–moreover, speaking about such things seems to be the right thing to do. And hard as it is to accept, there seems to be common denominator between the individuals mentioned above. Each of them was passionate and fiercely independent about what they believed in; each stubborn to a fault; each was a work-a-holic; and each made an impact on the lives of others in their generation, and generations to come. Do such elaborations belong in the classroom? You bet they do.

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