

Review¹ of
The Scholar and the State:
In Search of Van der Waerden
by Alexander Soifer
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approx 450 pages

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1 Introduction

Alexander Soifer had previously written the book *The Mathematical Coloring Book: Mathematics of Coloring and the Colorful Life of its Creators* which was part math, part history, part memoir (it was written in the first person). I quote my review of that book:

Ordinary math books are not written in the first person; however, this is no ordinary math book! I pity the Library of Congress person who has to classify it. This book contains much math of interest and pointers to more math of interest. All of it has to do with coloring: Coloring the plane (Alexander Soifer's favorite problem), coloring a graph (e.g., the four color theorem), and of course Ramsey Theory. However, the book also has biographies of the people involved and scholarly discussions of who-conjectured-what-when and who-proved-what-when. When I took Calculus the textbook had a 120-word passage about the life of Newton. This book has a 120-page passage about the life of van der Waerden.

Saying that the prior book contained a 120-page passage about the life of van der Waerden (henceforth VDW) was an exaggeration; however, the book under review is a 450-page biography. . . , that does not seem quite right. The book does mainly focus on VDW's life, but there are so many profound issues that arise; therefore, I am reluctant to call it a biography.

Why is VDW's life worth writing about? While his contributions to Algebraic Geometry, and the theorem in combinatorics that bear his name, are quite impressive, these are not the reasons. Most of the book is about the time VDW lived in Germany and the time after that. Why is that remarkable? Because he was a Dutch citizen living in Germany from 1933-1945, under the Nazi regime.

2 Summary

The book has 43 chapters. The order is roughly chronological. Here is a rough breakdown, noting that not every chapter is that well defined as to what its about: there are 5 chapters on VDW before moving to Germany, 3 chapters on his famous book *Algebra*, 3 chapters on his theorem about arithmetic progressions, 14 chapters on his time in Germany, 7 chapters on his time after leaving Germany (in 1945), 4 chapters on Heisenberg, and the rest are on a smattering of topics.

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The real heart of the book is VDW's behavior under the Nazi regime and the questions that arise about what a scientist is supposed to do when working in a brutal dictatorship. VDW chose to stay in Germany, as a College Professor at a very prestigious university, despite many opportunities to leave. The questions that comes up again and again in the book is *why did he stay?*, and *was it the right thing to do?* On the second question there is a resounding answer of NO, though we will discuss that in the next paragraph. As to why he stayed a variety of reasons are given by both VDW and others. Was he naive about the Nazis? (No). Did he think Germany would be the best place to do mathematics? (Yes) Did he want to be well positioned no matter who won the war? (I see his delaying deciding on an appointment in Holland in the 1940's indicative of this view.) VDW claims there are two Germany's and that the Nazis are an aberration of the real Germany which he hoped would return after Germany lost the war. It was that Germany he was serving. Frankly, this seems like a hard argument to make rigorous

Why was it wrong to be in Nazi Germany? Note that he was working in pure math so his research did not contribute to the war effort. But also note that he taught students who did contribute. What may be a more important issue: he gave that regime an air of legitimacy.

Did it affect his later career? There are a few different issues about this. When asked to defend his actions his answers were self-serving, insensitive, incomplete, and sometimes fictional. He also never seemed to say his actions were wrong. I would like to say *if he had come clean and apologized from the very beginning he would have been better off* but this is not clear. The notion of *admit what you did early and control the narrative* only works if you really do have a viable defense, which I do not think VDW did. In the end VDW did get a job in Zurich which he kept for the rest of his life, so, sad to say, his approach may have worked.

What are we to think of him? While he was clearly not a Nazi (and early on he objected to Jews being dismissed from the university) but he was comfortably employed and respected in Germany and had the support of Nazis (he stopped criticizing the regime very early on). If Germany had won the war he surely would be a Professor there, and that bothers me.

The chapters on Heisenberg pose a different question. Heisenberg worked on the Atom Bomb for Nazi Germany. He claims he wasn't working that hard on it. There is also the question of whether he was on the right track. His actions, and his defenses, are both even worse than VDW's. But again, he got a job and a life, so, sad to say, his approach may have worked.

The book also covers the following:

1. The history of VDW's Algebra book. My impression from the book under review is that Artin should have been a co-author. Also, it seems as though VDW blocked competing books from being published. While this is hardly comparable to lending the Nazi regime credibility it may give insight into the man's moral character.
2. The history of VDW's theorem. This raises questions about who should get credit. VDW's behavior here is fine. While it looks like (again!) Artin should be a co-author, when it was published VDW did not think much of the theorem so this is not really a slight. However, Soifer thinks the poser of the question (credited to Baudet, but Soifer gives more evidence than I wanted to read for Schur) should also get credit and maybe be co-authors. While I see his point of view, and it might double my paper count (I am much more of a poser of problems than a solver), this system sounds complicated. Another issue: the theorem got popularized from a book *Three Pearls of Number Theory* by Khinchin. If Khinchin's book was not published then VDW's theorem might still be relatively unknown. Unlike Ramsey's

Theorem, VDW's theorem is not used that much to prove other things, so it might not have been rediscovered. Its important to realize that when pure math is not tied to any application it may be somewhat arbitrary what gets out there.

3 Other Questions the Book Raises

The book made me think of the following questions.

1. What should you do if you are stuck in a brutal regime but you yourself are safe?
2. What should you do if you are stuck in a brutal regime but you yourself are safe, and you are asked to help the regime? (e.g., Teach Mathematics at the university, or build an Atom Bomb).
3. Why does Nazi Germany get all the attention of being a bad regime when others were also bad? Speculation:
 - (a) The holocaust was a genocide that killed 6,000,000 Jews (and 4,000,000 other people for a variety of other reasons). A *genocide* is an intentional killing of a people for no other reason than they are of that people. Stalin killed more people, but it was not a genocide (though it was close to one). Other nations had genocides, but they didn't kill anywhere near 6,000,000. Nazi Germany carried out the largest genocide ever.
 - (b) They started WW II and (worst of all for their history) they lost. The winners get to write the textbooks and decide what is and is not a war crime.
 - (c) Germany was seen as being part of the first world. The soft bigotry of low expectations² makes us yawn when we hear that some country or tribe in Africa is committing genocide on another. Afterwards we say *never again* again. Being part of the so called first world Germany is judged on a high standard and did far worse than anything Africa's ever seen.
4. If Professor X is really good at his job and you want to hire him, do you care about his past? Realize that nobody thought VDW was a Nazi, so the issue is not that his beliefs may infiltrate the students. Can the past be put in the past? For American's absolutely yes—America hired actual Nazi Rocket Scientists like Wernher von Braun (the book includes the lyrics to the Tom Lehrer song about him). People who I've talked to about the book are sometimes baffled- if VDW wants a job at your school, then the fact that he happened to be in Germany during the Nazi era is regrettable but he never had those views then and doesn't have them now, so of course you hire him!
5. With regard to the last point, VDW was of course brilliant. For someone much less brilliant would a school not hire them and then feel good about themselves? There are two variables here—how brilliant is the job candidate, and how bad is their past. There may be some brilliant vs bad-past tradeoff. This may also depend on who else you've hired in the recent past, so it may be a time-dependent tradeoff, maybe a stochastic process.

²This phrase was due to Michael Gerson, a speechwriter for George W Bush. Since the book under review is about moral choices one makes I want to make sure I credit people fairly.

6. The Nazis judged science partially on whether or not Jews worked on it. The Nazis attitude caused some Jewish scientists to leave, and directly killed others. The death camps were a drain on resources. All of this contributed to them losing the war. Had they only wanted to conquer territories in Europe and used all the people they had towards this goal, and had absolutly no distinction between Jews and others, would they have won the war? More generally, when a society bans certain people from certain jobs this seems to always be a bad idea. (A more recent example was, in America, firing Arabic translators because they were gay.) Why do countries (or people or sports teams or ...) do this when it is clearly against their interests?

4 Opinion

For most books in this column the question arises *Who can read this book?* For example, not everyone can read *Canonical Ramsey Theory on Polish Spaces* which is a real book! Honest! For the book under review there is very little barrier to entry. There is very little math in it and the math in it is not the point anyway.

Who should read this book? Anyone who is interested in history and the profound moral questions that arise from its study. I would like to think that means everyone who is reading this review.