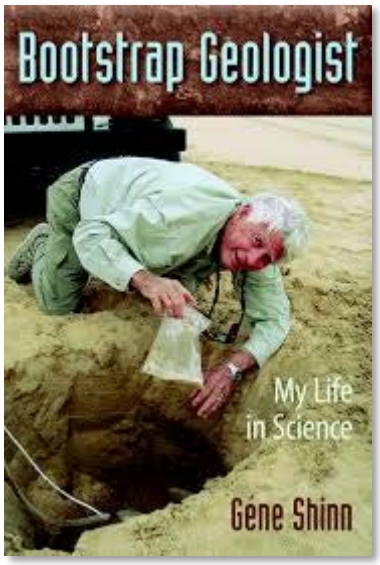

Bootstrap geologist - *my life in science*, by Gene Shinn, 2013. University Press of Florida, 15 NW 15th St., Gainesville, FL 36611-2079, U.S.A.. Hardback, xii + 298 pages. Price US 34.95. ISBN 978-0-8130-4436-1.

Eugene A. 'Gene' Shinn is an exceptional geologist. Whereas most geologists nowadays have a job just for living, he had an adventurous career and, most of all, his thinking in an unconventional way led to discoveries that changed geological thinking. His achievements have been widely recognised (he was awarded, among others, the Twenhofel Medal from SEPM - Society for Sedimentary Geology) and this autobiography provides a good insight in how and where he worked (and with whom) and - even more important - how he thought. In combination with some remarks that he makes in the epilogue about differences between 'then' and 'now' with respect to doing science, this is a highly valuable guide for all young geologists who have the ambition to enjoy both life and science.

The reputation of Shinn resulted initially from fieldwork in the Persian Gulf that led him to the conclusion that lithification, changing lime mud into limestone, does not require - as was commonly thought then, specifically in oil companies - fresh water, but can (and commonly did) take place in the same marine environment where the lime mud was deposited. A later finding by him was that dolomite can precipitate in modern environments and, in contrast to what was commonly thought, does not need deep burial. These findings changed our ideas about limestone formation fundamentally. It is interesting in this context that, when Gene made his discovery about 'marine lithification' of limestone in the mid-sixties, I was a student at Leiden (Netherlands) University. My professors never suggested that limestone could undergo lithification exclusively under fresh-water conditions: limestones were considered as deposits formed at the bottom of the sea, where they also became lithified. Were we at Leiden University at the time scientifically ahead of the large oil companies?

Whatever may be the case, it remains interesting that Shinn did not come to these (and other) insights on the basis of theoretical considerations, modelling or extensive literature search. His discovery of marine limestone lithification was just a consequence of his hobby to go spear fishing (he was a champion in that sport, and made many people happy by providing fresh fish for dinner): while diving in the Persian Gulf to catch fish, he found fairly young pottery covered with lithified carbonates, and he realized immediately that this could not be explained by lithification in fresh water, as the sea had not fallen dry since the pottery came to rest on the seafloor. And then, trying to withdraw his spear from under an overhanging reef wall, he unintentionally broke the lithified top limestone layer and found lime mud underneath. He understood the possible consequences immediately. Further investigation showed a succession of alternating limestones and lime muds, which was even more convincing proof that lithification had not taken place under fresh-water conditions. His discovery was not easily accepted. It took much time before he had convinced his employer (Shell), but eventually it led to a much better insight where exploration for oil could be performed effectively. Better understanding the lithification of lime mud must have been a financial bonanza for Shell!

All this was possible because Shinn had an open mind for the possible consequences of field observations. His struggle to convince other people that their ‘old' ideas were sometimes wrong also is characteristic of his scientific attitude. It led to many more findings (e.g. the presence of huge stromatolites still being built up in a sea of only some 6 meter depth). It also led to an increasing aversion of people who just followed routine procedures, and even more of regulations.

This is possibly best expressed in the epilogue of the book, where he makes several statements that may disturb many ‘white-collar people'. To mention only some of them. Shinn admits that there have been great technical advances in science, but he denies that this led to significant progress. Most geologists now prefer to avoid the hardship of the field, working with ever more sophisticated (and more expensive) equipment in air-conditioned working places, not producing new results but fine-tuning existing data, thus only refining measurements which leads to a flood of routine publications that do not bring geology any farther along. Another statement of Shinn’s is about the decrease in quality of researchers is expressed, for instance, by the reviews of his manuscripts. Instead of demanding questions about problematic points, such as aspects that the author possibly overlooked, he was confronted with a question about the precise size of a geological hammer on a photo [and I had recently the same experience - I was asked about the precise size of a ballpoint pen - AJvL]. Apparently the reviewer had agreed to review a field-based manuscript without ever having worked in the field with a hammer himself!. The increase of regulations is also considered by Shinn as an ever growing obstacle for doing fieldwork: "I predict that the rock hammers with which we attack and sample rock outcrops will soon be legislated out of existence." It sounds like a nightmare, but who dares say that he isn't right?

Society changes rapidly, and Shinn is well aware that he is of a generation of field geologists that borders on extinction in our society where the production of rules and reports dominates over creative science. But he has a sharp eye, showing it where he talks about experiences with, for instance, environmentalists and bureaucrats, where field data are now considered less important than regulations and theoretical predictive models. He warns students that if you want to study science, you should study law in addition if you want to be successful!

The philosophical remarks in the epilogue are already more than enough to make this book a must-read. The book is also entertaining, however, with many anecdotes, also about the numerous - now often famous - colleagues with whom he cooperated. His style is attractive, and it is easily recognisable that he has written many popular-science articles about geological features. This book is a wonderful present to society; it would also be a very good present for any earth-science colleague.

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