

Memories About Bogdan Mielnik



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1 Bogdan as Seen by an Admiring Student

Bogdan was The most brilliant lecturer of all I met in my life. I attended his lectures on mathematical methods in physics in Warsaw in 1967/68 as a student and again in 1970/71 as a teaching assistant.

The unique feature of his lectures was that he embedded his mind into that of a student and answered questions arising in students' heads as he proceeded (without looking into any notes, he seemed to have none at hand).

While lecturing he walked slowly in front of the blackboard and made short pauses as if figuring out what to say next. The pauses created moments of dramatic suspension. This easy-to-follow style was important; in those years, students had to rely on their self-written notes. No textbook exactly matching the course was available for most of the lectures.

Lecturing was great fun for him (as well as for us). He used to intersperse his lectures with amusing digressions; here are a few examples:

Associations of mathematical notions with unrelated objects often help in reasoning. If it helps you to imagine a tensor as a dwarf plant covered with indices, then this is a good thing for you—go ahead with this analogy.

While explaining that a solution of a differential equation may depend discontinuously on continuous initial conditions, he said:

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Imagine you arrive at a station at time t to catch a train that leaves at T . The result is a continuous function of t as long as $t < T$. But if you arrive late, the result changes abruptly.

The association with train travel was based on his own experience. He lived in Brwinów, 25 km SW of the Institute of Physics. The one-way travel time today is more than 1 hour, including 45 minutes on train. On one rare occasion, Bogdan implied that he was not happy about the time spent on trains. (He seemed to be happy at all other times.) He said that as he looks backward from the rear end of the train, he feels as if his life is gradually left smeared on the rail ties.

While working on my PhD Thesis, I often had to wait in the corridors to meet my advisor, Jerzy Plebański. A few times, Bogdan spotted me waiting. Once, he commented on this situation as follows:

You know, the pterodactyls could not fly actively, they could only glide. So, when a pterodactyl needed to hunt down a prey, he had to climb a cliff, and then there was waaaaaiting, waaaaaiting, waaaaaiting...

Figures 1 and 2 show Bogdan on a hike during a free day at a University of Jena conference in Georghenthal (Fig. 1) and during a break at a conference in Mexico (Fig. 2).



Fig. 1 A hike in Thüringer Wald, May 1, 1973. The man in white suit is Alexander K. Gorbat-sievich, then a student in Jena, now a professor in Minsk



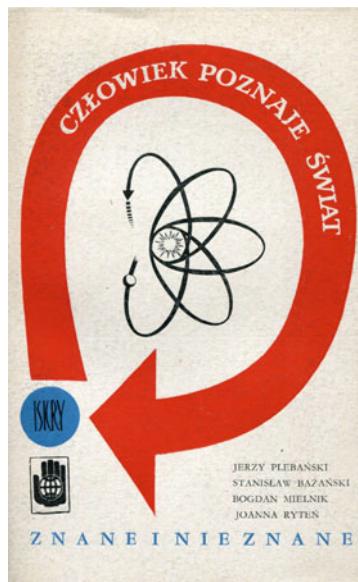
Fig. 2 Bogdan at the 75th birthday conference of Jerzy Plebański, Ciudad de México, September 20, 2002. Stanisław Woronowicz at left, Maciej Przanowski with the red folder

2 Bogdan in Action

My field of research (relativity) was within Bogdan's broad area of interest, so from time to time we met at seminars. Also, he was a friend and frequent chess-playing partner of Jerzy Plebański (by the way, he was J.P.'s first PhD student). This gave me several insights into his extra-scientific activities.

2.1 Presenting Science to Broad Public

- Bogdan is a co-author of the book *Znane i nieznane (The known and the unknown)* published in 1963. This is a collection of essays explaining what theoretical physics is about. (I read this book while I was in high school, and it influenced my decision to be a physicist. Ms. Ryteń, the fourth author, later married Ivor Robinson, left Poland and settled in the USA.)



- Another popular text is a sci-fi fairy tale entitled *The Beginning*.¹ It is about a space suit (worn by an astronaut) gradually acquiring its own intelligence and mental independence.
- The third one is a humorous fairy tale entitled *Notes from a Riemann space*² in which Bogdan followed on the idea of tensors being plants that have (edible) indices. Here are a few quotes:
 - It was May, the month when spinors bloom. (...)
 - In autumn, all indices fall down, covering the ground with a thick layer.
During autumn winds, index-blizzards begin (...)
 - We clear the field of Christoffels and plant Kartoffels.³

2.2 *Improvised Speeches*

Bogdan was famous for his ability to improvise humorous speeches on the spot. Some of them were recorded as movies or printed in the proceedings of the previous Białowieża workshops. One such speech can be viewed here: <https://wgmp.uwb.edu.pl/mielnik/>. It describes physical objects as participants in human life:

¹ Delta 1975-07, p. 16, https://drive.google.com/file/d/1HjuwhBzcKzFPjC-fX_CUsyHAP5h9oUi/view. Delta is a monthly magazine that prints articles (in Polish) on mathematics, physics, and astronomy at a popular level. It was founded in 1974 and still exists.

² Delta 1990-09, p. 17, <https://drive.google.com/file/d/1HjZKCSLq5k3PnoMoZrwJYUT8C02kkrog/view>.

³ Slightly distorted Polish for “potatoes.”

- Peasants were living in little cabañas with roofs covered by fiber bundles.
- Potatoes are quanta of the potato field.

Its slightly modified version was recorded in print and can be read here: <https://www.fis.cinvestav.mx/~merced/ecospace.pdf>. More such texts can be found in Bogdan's record in Google Scholar.

2.3 Articles on Topics Beyond Physics

Bogdan wrote several such articles. Some of them are based on the talks given at the Białowieża workshops and are included in the WGMP proceedings. In one, he criticized the suffocating grip of bureaucracy on science: *Bureaucratic World: Is it Unavoidable?* (XXX WGMP Workshop, 2011, https://link.springer.com/content/pdf/10.1007/978-3-0348-0448-6_39?pdf=chapter%20toc). Exemplary quotations:

- The most absurd demand ... is to present the program (and the time-table) of his [i.e., the scientist's] future discoveries.
- ... the problems of little importance are always infinitely more urgent than the truly important ones. This is why thou will never do anything important.
- The truly weak point of the bureaucratic system is not an insufficient control of the human masses (including the scientists) but rather the complete lack of control on the upper social levels (banks, governments, parliaments, etc.).

2.4 A Movie Appearance

Right: Bogdan in one scene
of the movie



In 1973, the movie *Iluminacja* [*The Enlightenment*], directed by Krzysztof Zanussi, hit the screens. Its plot, the life story of a man who began his adult life by studying physics, is partly embedded in the Department of Physics of the Warsaw University, where Zanussi himself had studied for some 3 years.

The adventure with this movie began as follows: one day in 1972, a meeting with Zanussi took place at the Institute of Physics. It began by K.Z. showing a documentary on nature protection. After the show, he asked the viewers what they think. Bewildered (the film did not invite any discussion), a few people raised their hands.

Zanussi pointed his finger at one of them. Then, one associate switched on a powerful spotlight and directed “a bunch of photons” (Bogdan’s description) at the speaker, a second one jumped to measure the brightness of the speaker’s face, and a third one started filming. The purpose of the meeting thus became clear. Nearly everybody who spoke up appeared in the movie.

In the movie’s credits (<https://filmpolski.pl/fp/index.php?film=12128>), the names of people connected with the Department of Physics of the Warsaw University are shown in boldface. My comments are in square brackets.

ILUMINACJA

Film fabularny

Production: Polish

Year of production: 1972

First showing: 1973. 11. 23

The movie shows short speeches by professors:

Władysław Tatarkiewicz, **Iwo Birula-Białyńicki**, **Jerzy Mycielski**, Sylwester Porowski, **Marian Kupczyński**

and by the students of physics:

M. Sawicki, K. Wódkiewicz, W. Rozmus, S. Wojciechowski.

Director—Krzysztof Zanussi

Screenplay—Krzysztof Zanussi

Director of photography—Edward Kłosiński

Cast:

Stanisław Latałło—Franciszek Retman

Monika Dzienisiewicz-Olbrychska—Agnieszka

Małgorzata Pritulak—Małgorzata, Franciszek’s wife

Jan Skotnicki—the patient

Edward Żebrowski—the doctor

Włodzimierz Zonn [an astronomy professor]—the dean

Bogdan Mielnik—playing himself



Fig. 3 A frame from *Iluminacja*. The scene is the real “Sala Seminaryjna Doświadczalna” (“Experimental Seminar Room”) at Hoża 69

Władysław Turski [former rector of the Warsaw University]—playing himself

Włodzimierz Zawadzki—the assistant

Łukasz Turski—member of the University admission committee

Jadwiga Colonna-Walewska—Franciszek’s mother

K. Ernst

H. Stefańska

Agnieszka Holland—member of the University admission committee

In Fig. 3, the movie’s hero is passing the entry exam to the Department of Physics. Seen are, left to right, Iwo Białynicki-Birula, Łukasz Turski, Bogdan Mielnik, Agnieszka Holland (in later years she became a movie director herself), and Stanisław Latałło (lead role in this movie, but cameraman by profession, died in a mountaineering accident in the Himalayas in 1974).

A 3-minute segment of the movie may be viewed at https://www.youtube.com/watch?v=DxFXt_cLLbs; a 25-minute speech (in Polish) by Zanussi describing the motivation and some circumstances of the shooting may be viewed at https://www.youtube.com/watch?v=y_YZhm-MERA.

2.5 Other Public Appearances



Bogdan did not shy away from appearing in press, TV, and public discussions. In 1973, he took part in an interview with a few scientists for the weekly magazine *Polityka* (No. 50 of December 15, 1973, page 7). The photo of Bogdan was on the front page, see above. The topic of the interview was whether it makes sense to send Polish scientists to work in other countries. The discussion touched upon the relation between pure and applied sciences. Bogdan argued in favor of pure science in his characteristic way: *It would be a mistake to believe that a cat will faster grow a puffy tail if you cut off its head.*

Once, in the early 1970s, Bogdan appeared in the weekly TV show *Fakty, opinie, hipotezy* (Facts, opinions, hypotheses). It was run by Wanda Konarzewska, a journalist. These shows began as popular science programs but evolved into confrontations between scientists and maniacs, with the sympathy of the moderator being on the side of the invited maniacs.

The show with Bogdan was about a lone genius from Prague (Czech Republic), who constructed a tabletop windmill powered by his “psychic energy.” The genius would not reveal any detail of the construction. Mrs. W.K. asked Bogdan what he thinks about the device. Bogdan first demonstrated how his own psychic energy powers his hand to bend and straighten out and then asked: did I invent a new kind of energy thereby?

Confused, Mrs. W.K. ended the show at that. It was fun to watch.⁴

On March 1, 1971, a public meeting was organized by the “European Cultural Society” (which seems not to exist today). The subject was a gravitation theory, meant to replace general relativity, proposed by Tadeusz Kochmański, a professor of rock mechanics and geodesy at the Mining and Metallurgy Academy in Cracow.



His criticism of Einstein's theory was based on misinterpreted quotations from press and popular literature. But T.K. was an influential figure and won quite some publicity for it. The meeting was described in a humorous column in the *Polityka* weekly by Daniel Passent, a columnist writing under the nickname “Bywalec” (*Man of the World*) (*Polityka* No. 14 of April 3, 1971, page 12, “Einstein ma tyły” ≈ Einstein in trouble); see above. *Polityka*'s text is not a faithful report, but a description distorted toward grotesque.

The audience included physicists and many scholars in humanities. Prof. Kochmański dismissed all arguments against his theory. He complained that his paper cannot be published because of unfavorable reviews. Bogdan revealed himself as one of the reviewers and, rather incautiously, admitted that he was not able to understand what T.K.'s paper was about. The humanist scholars picked up the easy opportunity and jumped on Bogdan, accusing him of being a poor-quality scientist. In reply, Łukasz Turski recalled how humanist scholars used to burn scientists at stakes in past centuries. He got some applause for this, also from the opponents.

⁴ Those shows were not recorded and not even a list of them exists—this is official information from the archives of the Polish state TV.

At the end of the meeting, a group of physicists surrounded the chairman (Wojciech Natanson) and tried to persuade him to invite real scientists as speakers at such meetings.

With time, T.K.'s theory slowly and smoothly went into oblivion.

2.6 Other Recollections

Jerzy Plebański, my PhD advisor, left for Mexico just after my PhD defense. In theory, for 3 years. Expecting his return, my promotion was delayed by 6 years. Then, hope vanished.⁵ Bogdan became my “deputy advisor,” in this role took my PhD oath, and signed my PhD certificate. So, I am now his “deputy PhD student.”

Bogdan had a few real PhD students. The “Mathematics genealogy project” (<https://www.genealogy.math.ndsu.nodak.edu/id.php?id=223968>) mentions three: David Fernandez Cabrera (promoted in 1988), Francisco Delgado-Cepeda (1999), and Sara Cruz y Cruz (2005). But this list is incomplete. Stefan Wojciechowski was Bogdan's first PhD student, promoted in 1977 in Warsaw. Later, he was a professor of mathematics in Linköping, Sweden, and changed his name to Rauch-Wojciechowski, see Fig. 4. Jacek Waniewski was Bogdan's second Polish PhD student, promoted in 1983. Now he is a professor in the Institute of Biocybernetics and Biomedical Engineering, Polish Academy of Sciences, see Fig. 4.



Fig. 4 Stefan Wojciechowski (in February 1970 in the Tatra mountains) at left and Jacek Waniewski at right

⁵ J.P. stayed in Mexico for 32 years, till the end of his life. He dropped by Poland for a few visits, the longest of which lasted 6 months (in 1991).



Fig. 5 Bogdan Mielnik at various stages of his career. See the text for explanations

3 Summary

Figure 5 is a collection of photos of Bogdan Mielnik taken at selected moments of his life. Upper row, left to right: at 16 in 1952, in Mexico with the Plebański family in 1963, a freshly minted PhD in 1964. Lower row, left to right: at a conference in Ciudad Mexico on 17 Sep. 2002 (with Dr. René Asomoza, Academic Secretary of Cinvestav), at one of the Białowieża workshops (Jakub Rembieliński and Elżbieta Kamińska in the background). The label on the bottle says “Old Mielnik.”

4 Conclusion

It is sad to realize that such an admirable person as Bogdan Mielnik, a great scientist, a perfect teacher, a charming colleague, and a witty, amusing companion on all occasions is no longer with us. We cannot help the passing away of people we like. All we can do is to keep them alive in our memories. So this is the conclusion of this article: Long live Bogdan in our memory!

Acknowledgments I am grateful to David J. Fernandez for sharing the photos from his publications and to the service staff of the National Library in Warsaw for their help in accessing the old issues of *Polityka*. The pages from *Polityka* are reproduced here with the permission of the Editors. Bogdan’s articles in *Delta* were dug up by Dr. Szymon Charzyński.