

DEHN AT BLACK
MOUNTAIN COLLEGE

“I have met two men in
my life who make me think of Socrates: Max
Dehn and

Brice Parain/ French Philosopher,”

André Weil ”

The warm feeling toward Max
Dehn expressed by Andre Weil/ was
shared by the faculty and students at
Black Mountain College/rest of

quotation below. Dehn was looked up to as a wise philosopher, and had the appearance of one also. Both he and his wife, Toni, were very active in the daily workings of the college. This included the duties of the faculty as both the teaching staff and the governing council of the College, and the community obligations, which included taking care of the cleanliness and repair of the grounds and the buildings, a chore usually reserved for Saturdays.

The Dehn's came to Black Mountain in 1945 from St. John's, the "Great Books" College, four years before my arrival in 1949. Dehn died in the summer of 1952 just after I graduated. The College itself was founded in 1933 by John Rice and Theodore Dreier as an experiment in education. Rice and Dreier, professors at Rollins College in

Florida, were dissatisfied with the educational policies at Rollins, and their dissatisfaction resulted in their leaving Rollins to found an institution which reflected their more liberal educational views. The title of the very fine book by Martin Duberman/, *Black Mountain, An Exploration in Community*, reflects their intentions. Their plans, among other things, included the idea of a strong influence from the Arts. This was an intention which was fulfilled to the point of becoming its most famous aspect, especially due to the early presence of Joseph and Anni Albers of Bauhaus fame, who were involved with the College from 1933-1949. In *The Arts at Black Mountain*, by Mary Emma Harris/, this point is explored and illustrated in great detail. The presence of Joseph and Anni Albers was decisive in tilting BMC in the direction of the arts, and was the first of the hiring that reflected the

migration from Europe of European artists and scholars, a number of whom found their way to Black Mountain.

While Dehn's mathematical friends were dismayed at Dehn having taken a job at an institution which had no mathematical eminence at all, Dehn himself found both the beautiful mountain setting and the very unorthodox educational arrangements both congenial and invigorating. He enjoyed the range of interesting people at the College and the possibility of walks in the mountains looking for rare orchids and other botanical discoveries, very satisfying. It was a safe haven after a rather harrowing escape from the horrors of Nazi Germany.

Dehn had deep interests in philosophy, both Eastern and Western. When I knew him, he devoted his afternoons to a nap and reading philosophy, usually reading sitting in his

study in a straight back chair. His taste in Eastern philosophy centred on Lao Tse and Taoism. His knowledge of classical Western Philosophy was thorough, as would be expected of one with a European education during those times. At the time that I was studying with him, he was also interested in the writings of the English philosopher David Hume. But we also had interesting conversations during our long walks in the mountains after my class with him, about the ideas of Schopenhauer, Kant and Hegel, philosophers that I was interested in at the time.

Both Dehn and Toni also had a strong interest in poetry; especially, and not unnaturally, the German poets. Among their favourites was Heine. I studied German with Toni, and Heine was part of our reading regime. Dehn's languages included, along with German, English, Norwegian, French, classical

Greek and Latin. John Rice was a classical scholar and he left to the College a fine classical library of works in Greek and Latin. With one or two exceptions, their principal reader was Max Dehn. Toni's languages were German, English, French and Italian.

✘ While Toni Dehn did not conduct formal classes at Black Mountain —her work with me in German was not part of any course structure, and I was the only person working with her— she was, however, an artistic influence with her work, along with Mrs. Jalowitz, in bookbinding. The two of them made beautiful book bindings, usually for other people's books at the College. Johanna Jalowitz, whom we all called "Jalo", that is "Yalo". Jalo's husband had been a well known European conductor, and Jalo herself was a singer of some note in Europe before coming to the United States. Jalo's husband came to Black

Mountain along with Jalo; he died sometime before I arrived. Dehn was buried in the woods along side of Jalo's husband's grave.

One of the courses that Dehn taught at Black Mountain during my time there was classical Greek. Charles Olsen, the poet, and a faculty member of the College, was one of Dehn's Classical Greek students. Olsen was rather displeased with Dehn's method of teaching languages. Dehn was of the opinion that one needed to learn both grammar and vocabulary as part of learning a language, and in the usual way for people who come to language after early childhood, by memorizing. Olsen's idea was that language was something you came to by some kind of process of osmosis, perhaps in the way that infants come to learn language, so there was a parting of the ways and Olsen left the course.

Dehn also taught a course called “Geometry for Artists”, which was a course in perspective geometry, that is, Projective Geometry. This course was well-attended, and appreciated by the students, although some of the more technical parts proved to be a bit obscure for some of the students with little previous mathematical training. Dehn taught more advanced courses in mathematics on an individual basis. During my time at Black Mountain, he had two students who did a full time degree course in mathematics, Peter Nemenyi and myself. Each of us had private meetings with Dehn in his study in the Dehn apartment. I remember sitting with him side by side at his desk in front of a window that looked out on the woods. Above me to my right was a shelf of books that included what was left of Dehn’s mathematical library, most of which had been carted off in

gunnysacks by the Gestapo while Dehn was still living in Germany. On that shelf were the collected works of Riemann and the works of Grassmann. And it was at this desk that I first learned about the ring of symmetric polynomials, a topic which has constituted the last several years of my research and publications. Dehn also taught a philosophy course, which was well attended.

My biweekly meetings with Dehn were always very pleasant and very interesting. There was a lot conversation about the background of the mathematics I was studying, as well as about the people whom Dehn had known as a student and teacher in Germany, for example, his teachers, David Hilbert and Felix Klein. Dehn along with his very close friend, Carl Ludwig Siegel/ (one of the outstanding mathematicians in the world at the time)

[], conducted a well-known seminar in the History of Mathematics when they were both at Frankfurt University in Germany. When Dehn discussed mathematics, there was always a large element of its history involved. Dehn also had a gentle and tolerant disposition, and so his very wide and deep knowledge, which went well-outside of mathematics, did not intrude as a barrier to his students. However, when accuracy and clarity were at stake, he could be very demanding. When I had completed the work on my thesis and the time came for a careful reading of it with him, he showed another side altogether. He went over my thesis with me in the house of Hazel Larsen, a well-known photographer at Black Mountain, who knew him as this very kind and gentle man. Hazel was completely surprised how demanding and unrelenting he could be when truth and

accuracy were at stake, and I too saw a side of Dehn that had not appeared before.

The class with Dehn almost always ended with first a cup of tea with Toni, then a walk in the woods with interesting conversation, sometimes about areas of philosophy that I was interested in; along the way Dehn would often point out a rare orchid hiding below the foliage. Botany in general and orchids in particular were areas in which he was an expert. These conversational walks together were as valuable and interesting as our classes.

The degree program at Black Mountain was strongly patterned after European, and particularly German, degree programs. A student who expected to finish with a degree or a certificate/ at BMC first had to pass a qualifying examination conducted by the entire faculty, which was a test of what

the faculty deemed to be a reasonable grasp of general subject matter. They then selected an area of specialization and were assigned a faculty advisor with whom they wrote a thesis or did a project in their field, and were again examined before an assembly of the faculty, this time by an outside specialist, who gave a critical judgment of their project. If all of this was successful, the student was awarded a degree or certificate. This choice was a result of the underlying philosophy at Black Mountain College of breaking away from the usual way, that marking and judging were handled in other educational institutions. Some of the more educationally adventurous students preferred to settle for a certificate of graduation, and avoid the more prosaic formal Degree. x(marking philosophy) Dehn came down on the realistic side, and insisted that I graduate with a

Bachelor of Science degree. Peter Nemenyi, on the other hand, was more idealistic; he went on to Princeton with a Certificate of Graduation from Black Mountain College.

Peter Nemenyi was an especially gifted student. His father was a professor of applied mathematics at George Washington University, and his half-brother was Bobby Fischer, the famous chess prodigy. Peter was raised by his father in a Nelson-influenced socialist community in Hungary before coming to the United States. And the rest of his life was committed to the principle that what he did should be of use first and foremost, to society.

Peter's degree topic was Special Functions and his outside examiner was Emile Artin/ (one of the most outstanding mathematicians at that time). After Black Mountain, he went to Princeton University on a scholarship,

and obtained his Ph.D. under John Tukey/ []. Peter was very successful as a mathematician and produced a number of results that now carry his name.

My thesis work was in Foundations of Geometry, an area in which Dehn earned his initial fame. Dehn was a student of the German mathematician, David Hilbert, one of the most famous and productive mathematicians in the last two or three hundred years.

Hilbert is well-known for his 23 unsolved mathematical problems, which he presented at the International Congress of Mathematicians in Paris in 1900/, problems which Hilbert deemed to be the then current outstanding problems in mathematics. Reputations have been made since by the solvers of these problems/ (see Yandell, “The Honors Class” []). As a 22 year old student of Hilbert, Dehn was the first person to solve one of Hilbert’s

problems (the third problem), which assured the blossoming of Dehn's reputation. After that he made fundamental contributions in a number of areas of mathematics (e.g., Topology, Geometry, and Group Theory/see Peiffer []). Among his students were Ruth Moufang, Jacob Nielsen, and Wilhelm Magnus.

My background reading for my thesis included Euclid's *Elements*. The only copy of the *Elements* available at Black Mountain belonged to Max Dehn. It was a beautiful edition/ **(ELEMENTS OF EUCLID, 2 vols, BERLIN, 1824)** facing pages in Greek and Latin. I had no Greek, but I was able to read it in Latin. *This book, as well as two others, were left to me after Dehn's death. []* *(The other two are: (Maniere Universelle de Mr. Desargues pour pratiquer la PERSPECTIVE PAR PETIT-PIED COMME LE*

GEOMETRAL, Paris, PIERE DES-HAYES, 1648,) BERLIN, 1824, and JORDAN COURS D'ANALYSE, 2 VOLS. GAUTHIER-VILLARS ET FILS PARIS, 1893)

My outside examiner at Black Mountain was Alfred Brauer, who was then teaching at the University of North Carolina in Chapel Hill. Thanks to my work with Dehn, I was given a teaching fellowship at Chapel Hill, where I went to do my graduate work. There I taught a beginning course in Algebra. Unfortunately, my studies (and teaching) were interrupted by my draft board in Casper, Wyoming, which thought that I would be better at fighting in the Korean War. Rather than go into the Army, I chose to change my Naval Reserve status to active duty, so I spent two and one-half years in the U.S. Navy. After Boot Camp I married Selma Weisberger. My wife and I went to San

Francisco where I attended a Navy Electronics School on Treasure Island near San Francisco for training in electronics. There my marks were high enough that I had a choice of berths when I graduated, so I chose to go to an air force base in southern California, in the same desert where I had worked as a surveyor earlier on. When my tour of duty was over I went to the University of Manchester in England to continue my graduate work. There I received an MSc. degree. My thesis was entitled "Abelian Groups and Tensor Products". My supervisors were Peter Hilton and B.H. Neumann. Later I received a Ph.D at Adelphi University, where my thesis was on Roots of D -Pi groups.

My teaching career included a course in mathematics taught at Black Mountain College, then at the University of North Carolina, a beginning algebra course, as mentioned above; after

Manchester, I taught for several years at Rutgers University in New Jersey, then at Adelphi University on Long Island. Finally, I went to Canada and taught for 46 years at York University in Toronto, until retirement. My special areas of interest in mathematics are geometry, group theory and algebra in which I have published a number papers.

Dehn, who had short teaching stints at the University of Idaho and at Madison, Wisconsin and in Illinois, as well as St. Johns, did not have many students who specialized in mathematics when at Black Mountain, but he was a strong influence on a number of students and faculty members at the College. Among whom were Ruth Asawa/ and Dorothea Rockburne/, both of whom became very well-known artists. There is an interesting remark in Yandell's *Honours Class, p. 134*, by Mildred Harding, who, in a conversation in which Dehn

reflects that, in his sixty years of teaching, he has “had 15 students of real mathematical talent”/ .

Dehn’s colleagues at Black Mountain College included, in addition to Natasha Goldowski (Physics and Chemistry), Victor Sprague (biology), Paul Leser (Anthropology) and John Adams (also Anthropology), Flola Shepard (Languages and Linguistics), Madame Goldowski, Natasha’s mother, (Russian), Lou Harrison (composer), John Cage (composer), Stefan Wolpe (composer), Merce Cunningham (dancer), Katherine Litz (dancer), Robert Motherwell (artist), Franz Kline (artist), Ben Shahn (artist), Joe Fiore (composer), Charles Olsen (poet), Paul Goodman (writer and poet), Wes Huss, (drama), M.C.Richards (writing, theatre, translation), Bill Levy (philosophy).

In addition to studying mathematics with Max Dehn, I also studied physics

with Natasha Goldowski, French and Linguistics with Flola Shepard, Russian with Madame Goldowski, and, as mentioned above, German with Toni Dehn. I was also very interested in Anthropology at the time, and while, I had no formal courses, I was good friends with both Paul Laser and with John Adams, and had extensive conversations with both of them concerning my particular anthropological interests. I was also interested in theatre: Mary Fitton and I were the Phonographs in MC's translation of the surrealist Cocteau play, 'Marriage on the Eiffel Tower', for which I also made some (surrealistic) props. I also acted in a play produced by West Huss and in one written and produced by Mark Hedden. I had a course in counterpoint from Lou Harrison. I also had a literature course with MC Richards.

It is perhaps of interest how I came to be at Black Mountain in the first place. I graduated from Natrona County High School in Casper, Wyoming in 1945, and went to the University of Wyoming in Laramie for two years where I studied French, German, Philosophy and Mathematics. Here I became friends with Andy Fischer, an interesting young poet, who had a talent for meeting people who were also interesting and who had unusual backgrounds. When Black Mountain had its 'time of the troubles' when the Albers left, Bolotovski and Wooden Day came to the University of Wyoming, and my friend, Andy, with his sixth sense for spotting interesting people immediately made friends with them. I had to leave the University just a short time before because my money had run out, and I got a job with the United States Coast

and Geodetic Survey. I worked first in Wyoming, then in Arizona and Southern California. Mostly the job entailed working in the desert and climbing mountains. My surveying party was later sent to Alaska, where we were set to work surveying the Kanai Peninsula, again climbing mountains. At my last camp site there, I was alone in a tent three-quarters of the way up the side of Mount Veniaminoff near Mount Aniakchak, both active volcanos. I was subsequently 'rescued' by a bush pilot in small plane from the side of this mountain, which, in the meantime had become engulfed in snow. My friend Andy, who by now was enthusiastic about Black Mountain College after hearing accounts about it from Bolotovski, wrote me a letter together with a Black Mountain brochure, telling me that I must go to Black Mountain. So, when the Alaska project was

finished, I left the Coast Survey, and did what Andy told me to do. I came to Black Mountain. Natasha Goldowski's mother, Madame Goldowski, and who as a child had known Tolstoy, and now in her mid- eighties, renamed me "Alaska Boy".

At the time, I did not know that Max Dehn occupied such an important spot in the mathematical world . In the brochure that Andy sent me, there were two teachers mentioned in connection with Mathematics, one was Ted Dreier, the other was Max Dehn, neither of whom I had ever heard of. I arrived at Black Mountain in September of 1949, just after the summer of the big quarrel when the Albers and a number of other people, including Ted Dreier left. So I did not meet Dreier. I was also to learn that there was an enormous gulf between Dreier and Dehn as far as mathematical ability was

concerned.

In fact, the faculty and students at Black Mountain in general did not understand Dehn's outstanding position as a mathematician. He could have been an obscure high school teacher, as far as the people at the College were concerned. I learned differently when I came to know Wilhelm Magnus, a professor in the Courant Institute at New York University, one of Dehn's former German Ph.D. students, and a well-known mathematician in his own right. It was from Magnus that I began to learn of Dehn's reputation and high regard in the world of mathematics. I think that I then helped to spread the word at Black Mountain about Dehn's mathematical reputation, letting it be known the extent of his regard in the mathematical world, and that Max Dehn was not a simple high school mathematics teacher, but a famous

professor and mathematician at Frankfort University in Germany, and his name then began being added to the list of luminaries at the College.

{{See *Origins of Combinatorial Group Theory*, Chandler, Magnus and Solitar}}

/Rest of Weil's quotation: “ Both of them, like Socrates—as we picture him from the accounts of disciples—possessed a radiance which makes one naturally bow down before their memory: a quality both intellectual and moral, that is best conveyed by the word “wisdom”; for holiness is another thing altogether. In comparison with the wise man, the saint is perhaps just a specialist—a specialist in holiness; whereas the wise man has no specialty. This is not to say, far from it, that Dehn was not a mathematician of great talent; he left

behind a body of work of very high quality.

But for such a man, truth is all one, and mathematics is but one of the mirrors in which it is reflected—perhaps more purely than elsewhere. Dehn's all-embracing mind held a profound knowledge of Greek philosophy and mathematics."

/André Weil **dates** was one of the outstanding mathematicians of the last two centuries, and the older brother of Simone Weil, the French philosopher and mystic.