

The BKPS Letter of 1962: The History of a “New Math” Episode

David Lindsay Roberts

In 1999, a group of research mathematicians organized an open letter to then Secretary of Education Richard Riley, which was published in the *Washington Post* that November. In recalling this event in his article “Research mathematicians and mathematics education: A critique” [1], Anthony Ralston makes favorable mention of a letter on mathematics education published by a group of mathematicians in 1962.

However, it is doubtful that this letter proves something positive about the educational acumen of mathematicians or even demonstrates that the signers, aside from a small minority, knew what they were writing about. I base this statement primarily on my historical research in the records of the School Mathematics Study Group, held in the Archives of American Mathematics (AAM) at the University of Texas at Austin, supplemented by oral history interviews I have been conducting, also held at the AAM. I describe this evidence below, with the thought that reviewing this earlier foray of research mathematicians into the public discussion of school mathematics may be useful background for similar events, such as the Riley letter, of our own time.

The 1962 letter, titled “On the mathematics curriculum of the high school”, was published in both *The Mathematics Teacher* (March 1962, pp. 191–195) and the *American Mathematical Monthly* (May 1962, pp. 189–193). This was at a time when there was considerable debate surrounding the

David Lindsay Roberts is an independent scholar specializing in the history of mathematics education. His email address is Robertsdl@ao1.com.

introduction of new school curriculum programs, often referred to as the “New Math.” The largest of these programs was the School Mathematics Study Group (MSG), founded in 1958 under the leadership of Edward Begle of the Yale University mathematics department. In 1961 Begle and MSG moved to the School of Education at Stanford University.

The records of MSG contain correspondence suggesting that the original letter was being circulated among mathematicians by the fall of 1961. (The letter as eventually published asserted that it was “sent to 75 mathematicians in the United States and Canada”, but the number of signers listed was in fact 64.) Begle obtained a copy from the editor of the *Monthly* and began asking MSG members and others for advice on how to respond. Almost all of this correspondence referred to the “Bers, Kline, Pólya, Schiffer” article or letter, strongly suggesting that the primary authors were Lipman Bers and Morris Kline of New York University and George Pólya and Max Schiffer of Stanford. (Hereafter I will refer to the BKPS letter.) This attribution of authorship is confirmed by a letter from Pólya to his former student Paul Rosenbloom, an MSG stalwart then at the University of Minnesota. Begle himself asserted the BKPS authorship in his published reply “Some remarks on ‘On the mathematics curriculum of the high school’” (*The Mathematics Teacher*, March 1962, pp. 195–196; *American Mathematical Monthly*, May 1962, pp. 425–426). Most of Begle’s correspondents attributed the primary authorship to Morris Kline, hiding behind an alphabetic smoke-screen. There seems little reason to doubt that

Kline was the main instigator. He had been vocal on education matters since the mid-1950s and by 1961 was publicly criticizing SMSG and other new programs. Kline later reprinted the BKPS letter in his book of 1973, *Why Johnny Can't Add: The Failure of the New Math*.

The BKPS letter, in between prefatory and concluding remarks, described guidelines for judging mathematics curricula. It warned against focusing the curriculum too exclusively on future mathematicians, urged that abstract concepts be built on concrete examples, and recommended greater attention to connecting mathematics with science. Begle and his allies were in full agreement with all of this. One correspondent reported that University of Wisconsin mathematician R. Creighton Buck (occasional SMSG contributor and signer of the BKPS letter) "hoped that lots of SMSG people would climb on the bandwagon and sign the manifesto in hopes of pulling Kline's teeth." At least one other SMSG participant, Henry Pollak of the Bell Telephone Laboratories, did sign the BKPS letter precisely in order to assert his belief that SMSG was developing its materials in accordance with the letter's guidelines (1998 interview with me). The only recommendation of the BKPS letter about which Begle quibbled in his response was the "genetic principle", by which BKPS suggested that "The best way to guide the mental development of the individual is to let him retrace the mental development of the race." This would, noted Begle, seemingly "deny to our students the efficiency of using algebra in the first course in geometry."

It was not primarily the substance of the BKPS letter that bothered Begle and many SMSG supporters but rather some of the rhetorical scaffolding, especially one sentence near the end: "We cannot enter here into detailed analysis of the proposed new curricula, but we cannot leave unsaid that, in judging them on the basis of the guidelines stated above (Sections 1-5), we find points with which we cannot agree." Neither SMSG nor any other program was mentioned by name in the BKPS letter, but in view of Kline's previous writings and speeches, Begle felt that his program was being subjected to invidious, and highly nonconstructive, criticism.

Begle's response was to endeavor to elicit constructive comments from the BKPS signers. To this end he prepared a form letter and brief questionnaire, which he apparently sent to most if not all these individuals. He asked them to comment specifically on the strengths and weaknesses of SMSG materials with regard to the BKPS guidelines and also asked if they might be willing to devote some time to helping SMSG prepare a course "closely articulating mathematics and science at about the ninth grade level." In accordance with

good survey practices, he enclosed a return envelope.

The SMSG collection in Austin contains replies by twenty-four of the BKPS signers. A representative response was that of Harvard's Lars Ahlfors (who, by alphabetic accident, is often listed as author of BKPS): "The presence of my signature under the article which appeared in the *Monthly* does not mean that I am ready to make further comments which I fear would be rather amateurish."

Exactly one response evinced substantial knowledge of SMSG materials. This was from Harold Bacon of the Stanford University mathematics department, a man who had been devoting his professional attention for many years primarily to teaching issues. Another five responders claimed to have some knowledge of SMSG but provided minimal specific commentary, while expressing generally positive views of SMSG. For example, Richard Brauer of Harvard commented that "I never connected the trends which I do not like with SMSG." He was vague about these undesirable trends, as were the rest of this group, although one responder accused Max Beberman of the University of Illinois of advocating "dangerous extremes." The remaining eighteen responders either explicitly admitted having little or no knowledge of SMSG or strongly implied lack of such knowledge by failure to respond to any of Begle's questions, although several expressed a willingness to look over the materials at some future date. Eight of the responders said they were too busy with research to make any further contribution, and this seems implied by several of the others. Only one cited teaching responsibilities as preventing him from responding more fully.

Begle's files also contain critical comments on SMSG by four BKPS signers who were not included among the respondents to the questionnaire. Of these, only the critique by Kline's NYU colleague Peter Lax provides unequivocal evidence of conscientious close reading of SMSG materials.

It may be that a large proportion of the remaining signers of the BKPS letter who did not respond to Begle's questionnaire held well-formulated views on SMSG that they nevertheless failed to convey to Begle, but I know of no evidence to support this supposition.

I conclude that the BKPS letter was instigated by a small group of mathematicians with strong views on mathematics education who enlisted the aid of a larger group of mathematicians, many of whom had little if any knowledge of the issues under discussion, nor any inclination to become more deeply involved.

References

- [1] ANTHONY RALSTON, Research mathematics and mathematics education: A critique, *Notices* 51 (2004), 403-411.