

Paul B. Sears: Lessons in Classroom, Field and Living Room

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ABSTRACT. Paul B. Sears was kind and humble. He disliked false pretense and always was appreciative of the common man. He noted that the goal of teaching was to help students along the road so they could surpass the achievements of the teacher. Sears taught that a permanently balanced relationship with the environment was possible by prudent and skillful use of resources to obtain the maximum good for the longest time. His skills as a speaker, writer and artist enhanced his teaching and publications. A major goal of his teaching was to help students reconstruct the past, appreciate and understand the complexities and interactions of the present and thus knowledgeably predict the futures. Sears was active and still eager to learn and to interact with students even in the last years of his life.

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PROFESSOR

When considering undertaking graduate work, I was advised to select a graduate program based on the best faculty in my chosen field, rather than the most noted institution, and so I decided to pursue graduate study under Paul B. Sears at Oberlin College. As Sears so aptly taught, one is a part of all that one experiences. He provided the major warp and woof of my life. It sometimes is difficult to separate out specific contributions that each exposure has made. Anyone who has been in academia knows that one of the most difficult criterion to evaluate a professor for tenure and promotion is the contribution of teaching. Both students and teachers are mindful of how complex that relationship is, how subjective it is and how the greatest influence may occur at times when least expected. The major contributions of teaching usually are not the facts imparted, but rather attitudes, perceptions, thought processes, expressive ways of communication, and (as biologists often say) "some additional inherent characteristics." Because the real evaluation of a teacher is the result of a direct student-teacher relationship, I shall draw upon my personal experience with Paul Sears and summarize his most valuable characteristics as a teacher.

HUMBLE AND KIND

One summer in the 1940s, Sears was writing a book at his Bucyrus farm in the woods in an encampment consisting of a platform tent, army cot, portable typewriter, folding chair and the minimum of accessories (Fig. 1). When I visited him with my young daughter, he took time from his writing to teach her how to catch a fish with a branch, a piece of line and a hook made out of a safety pin. He shared with her the joy of her first-ever catch. Then he showed her how to make a stringer from a flexible stem of willow tied to the bank. When the stringer was retrieved later, the fish was gone, eaten by a turtle. Sears extended all the concern, sympathy and condolences of a good parent, using the experience as a lesson in the ways of nature.

As a graduate student doing vegetational reconstruction of northern Ohio by pollen analyses, I used Sears' favorite brass Davis peat borer. As I was unscrewing sections of rod while sampling from one of the deepest bogs, the borer slipped from my fingers and plummeted back down into the hole in the peat. My most immediate concern was, while fishing down the hole for the threaded rod, how I would tell him, how he would respond, whether



FIGURE 1. Sears' encampment circa 1940. Photo supplied by author.

I could live through it and if I would fail to get my degree. Fear and uncertainty were strong motivations to be creative and persistent in the effort to recover the borer. I do not know what his reaction would have been to its loss. I imagined that as I related the events to him, there would be that slight quizzical smile on his face as he was visualizing the situation, then a thoughtful look, perhaps a few moments of meditation while he cleaned the bowl of his pipe and then an understanding confirmation of the situation and a release from my guilt. Fortunately, I finally made proper contact with the threads and with a partial turn pulled up the borer. He was most grateful for its retrieval.

Sears disliked false pretense and attitudes of being indispensable. He always was appreciative of the common man blessed with integrity and humility. He always stressed that when you met a rancher for the first time, you should never let him know you had attended college and that you should listen to what he had to say. If his family had been successfully ranching for years, there would be a great deal that you could learn by listening, not talking. In regard to arrogance and boasting, Sears would have agreed with President Lincoln, who after problems with boastful generals in the Civil War, is reported to have said, "The hen is the wisest of all the animals created because she never cackles until after the egg is laid." Illustrative of Sears' humility was his favorite expression that the goal of a teacher was to help students along the road, so they could surpass the achievements of the teacher.

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CLASSICIST AND REALIST

In lectures and in informal seminars, Sears often quoted from classical Roman or Greek writings or from the Bible. Then he would make correlations to today's real world by pointing out similar principles and the effect of differences in modern technology and culture. As students, many of us felt an inadequacy in the classics; others were unaware (by personal experience) of the real natural world, that is, they did not grow up with soil under their feet and dirt on their hands. For some, a rural agricultural background had been replaced by the artificiality of city living. At most, some were familiar with flower beds and gardens versus native range and forests or with domestic pets versus wild animals, predator-prey relations and open space livestock. With his tolerance, Sears accepted us all, expecting each to maximize whatever talents and experiences he or she had. In fact, this melding of diverse talents was the motivation for him to move to Yale University and set up the Conservation Program.

This move was to maximize his talents of integration at the graduate student level. His goal was to bring together graduate students of multiple disciplines, such as anthropology, biology, the physical sciences, engineering and public health, in a seminar-discussion format. The cooperating faculty included such academic stars as Drs. Flint and Deevey. I have a colleague in archeology who enjoyed the 1-year course so much that he enrolled for a second year as an auditor.

Although appreciative of the use of mathematical analysis, Sears disliked its being touted for its own sake. Once he was as disturbed as I have ever seen him after a snobbish young scientist at a meeting of the Ecological Society of America gave a paper in which he became completely involved in and enamored of a maze of mathematical jargon and manipulations but made no connections to a problem to be solved, the use of the method, or relation to anything but itself.

Sears taught that a permanently balanced relationship of the environment was possible by prudent and skillful use of resources to obtain the maximum good for the longest time. Today, I believe he would be distressed at some people who have assumed the name of "ecologists", especially those who have taken on radical stands. These include rabid preservationists, who seem to believe one can maintain a natural community in "status quo" and prevent even natural events and changes, and many others who represent single-purpose interests and neglect the multiple factors in the environment and natural successional events. He also would be displeased about their frequent lack of understanding of the real world, to which fundamental principles apply and in which man is part of the environment.

Sears would have loved to use the history of pollen allergies in Albuquerque as an example of man's manipulation of the environment. Originally a semiarid desert area with native cottonwoods only along the Rio Grande, Albuquerque was a haven for those with respiratory problems. As the city grew, ordinances were passed against planting female cottonwoods, because of the feathery fruits that clogged up window screens, so pollen-producing male cottonwoods were chosen. These were followed by all-male Lombardy poplars and Siberian elms (prodigious in pollen production). To avoid undesirable fruits, male, pollen-producing Modesta ash and mulberry were planted, and to these were added landscape plantings of allergenic Arizona cypress and a host of horticultural varieties of junipers. Today, because of the variety of pollen-producing species introduced and the range of elevations within the city of Albuquerque, the tree pollen allergy

season lasts for three months: a man-made "respiratory hell" rather than a "haven."

RESPECTED AND RESPECTFUL

To the long list of honors, degrees and awards, all are indicative of the respect accorded to Sears by a great and variable audience. I offer a simple illustration relating to respect as a teacher. On several occasions, it was the privilege of my class of graduate students on an extended trip in field ecology to stop and visit Sears at his retirement apartment in Taos, New Mexico. Seated on the floor around him as he talked with them about ecology, life, education, art, or economics, they had a feeling of awe at sitting at the feet of the master. They came away enriched in a way difficult to evaluate. Equally impressive and important was Sears' definite expression of respect for them as graduate students working in the area of field ecology with an emphasis on seeing in the field the application of basic principles of the ecosystem and a practical approach. To the students, it was as though they were being blessed.

EXPRESSION IN WORDS, ART AND MUSIC

To me, one of the most valuable attributes of Sears as a teacher was his masterful use of one-liners. These frequently crystallized complex explanations into a simple phrase that was lucid and succinct. For example, he would have recognized that the expression "practice makes perfect" is incorrect and that instead it should be "perfect practice makes perfect."

While his short phrases sparkled, his prose was beautifully fluent. Witness the following quote (Sears 1935): "The face of earth is a graveyard, and so it has always been. To earth each living thing restores when it dies that which has been borrowed to give form and substance to its brief day in the sun."

Sears also used art creatively to express his ideas or as a means of increasing his own power to visualize. He was able to create impressions of minute detail, succinct integrations or open-ended concepts. He had a wonderful knack of summarizing attitudes, motion and concepts in simple pencil sketches, sometimes in stark, simplistic, stick figures. These have been used as marginal illustrations in some of his books. Conversely, in later years, he developed techniques of capturing, with the delicacy of watercolors, the beauty and flow of complex landscape/ecosystem scenery. He also expressed himself with music as a violinist, principally self-taught. When he was in his 80s and living in Taos, he realized that no one was teaching violin to grade school children. He bought some extra violins and taught some of them the basic principles of music and the joy of creating beautiful sound.

PERCEPTIVE AND PROPHETIC

In classroom education, he was not the best formal lecturer, especially in the sense of presenting details of specific knowledge. He believed that although students were capable of reading and learning textbook information themselves, they needed his help in understanding interactions and relationships to reach the conceptual level. To do this, he usually became quite informal, using personal experiences and perceptions plus illustrations to make his points. His powers of astute observation and perception of the role of limiting factors and interactive relations (often without complete understanding of the biophysical details) showed a commendable talent. He emphasized the correct application of principles and the unfortunate results of their misuse. He was able to make predictions with an understanding of the inevitable consequences

of changes in the system. A major goal of his teaching was to help the student to learn how to reconstruct the past, to appreciate and understand the complexities and interactions of the present, and thus to knowledgeably predict the future. He believed that the mastering of this complete sequence was essential for the student to become a valuable and active citizen, scholar and ecologist.

FOREVER A TEACHER AND A LEARNER

Into his late 90s, Sears was concerned and involved, to his capacity, with education in the community, whether in the library, museum or field demonstration plot. At 90, he fully enjoyed a long day in the field with me to study the forest ecology of northern New Mexico. He had a continuing need to learn more about the ecological history and succession of the sagebrush community around Taos. Near the end of his life, he was still inquisitive

of minutiae such as the nature of ligules and sheaths and other vegetative characteristics used to identify grasses. He was excited by, and appreciative of, the intricate details and the general principles involved in the marvels of similarities and differences related to evolution and genetic history. He was a living example of continued improvement of teaching by continued learning.

And so, this man with his inquisitive, twinkling, searching eyes, his expressive hint of a grin ready to burst into glorious laughter and his keen perceptive intellect combined with his greatest talent of synthesizing concepts lives on in the hearts and minds of all he met.

LITERATURE CITED

Sears PB. 1935. *Deserts on the March*. Norman: Univ Oklahoma Press. 256 p.