

# PHILOSOPHICAL ISSUES

Philosophy embraces the issues of what exists (ontology) and how we can know what exists (epistemology). The philosophy of science attempts to resolve these issues in the sphere of science at large as well as for specific scientific disciplines. Geomorphologists have not readily embraced philosophical discussion, an attitude reflected in Schumm's (1991) understated remark that 'most earth scientists do not find philosophical discussion of their field very interesting'. Traditionally, most geomorphologists have had, at best, only limited formal exposure to philosophy, and, what fleeting exposure they have had has been limited mainly to the tenets of logical positivism or critical rationalism. Unfortunately, the normative qualities of these philosophical doctrines have tended to irritate practicing scientists, resulting in a generation of geomorphologists that has shunned philosophy of science. In recent years, many traditional philosophical doctrines have been challenged as philosophy of science has shifted from a highly normative posture to a more naturalized one. Today, philosophy of science can in many instances be characterized as a 'science of science.' If geomorphologists are to develop a better understanding of their science, they must subject it to critical scrutiny. Here contemporary philosophical analysis can play an important role. This session was conceived as contributing to this task.

As an active participant in the creation of a naturalized philosophy of science, Harold Brown brings to the symposium a fountain of knowledge and experience of the present situation in philosophy of science. In providing a survey of his discipline Brown is able to show that scientific theories are an integral part of scientific methodology, and, consequently, that methodological and theoretical development in science progress hand in glove.

The great tradition of fieldwork in geomorphology has placed observation in a revered position in geomorphological inquiry. Bruce Rhoads and Colin Thorn examine recent ideas on observation in the philosophy of science and use these ideas as a filter or lens through which to view observation in geomorphology. They conclude that despite an undercurrent of radical empiricism in the discipline, observation in geomorphology is inherently theory-dependent. They also show how objectivity of geomorphologic inquiry can be preserved in the face of theory-dependent observations.

The logical positivist school believed that logic played no role in the discovery of new scientific ideas, but only in the justification of scientific knowledge. Victor Baker reviews the philosophical ideas of the American philosopher Charles S. Peirce, who held views different from those expressed by the logical positivists, but similar to those espoused by contemporary proponents of naturalized philosophy of science. Peirce paid great heed to

abductive reasoning, which he believed was fundamental to the conception of hypotheses. Therefore, his philosophy, unlike logical positivism, permits a real role for the philosophy of science in scientific discovery.

Because it is a human enterprise, science is at all times and places conducted in a social context. Consequently like philosophy, the sociology of science plays an important role in the manner in which knowledge is created and science is structured. Douglas Sherman takes up this issue directly for the discipline of geomorphology. He shows that a case can be made that the history of geomorphology is as much a reflection of the influence of individual 'fashion leaders' as any other factor.

The final chapter in this section, by Bruce Rhoads and Colin Thorn, was not presented at the Binghamton symposium from which this volume derives. It was conceived as an extension of the philosophy session after reading the papers in the editorial process. As such it does not attempt any definitive statements, but rather is devoted to pointing out philosophical issues or themes where geomorphologists may well garner important insights into the scientific nature of geomorphology. Its scope is broad, embracing natural kinds, laws, causality, causal explanation, theory and models, discovery, gender issues, and applied geomorphology.

## REFERENCE

Schumm, S.A. 1991. *To Interpret the Earth - Ten Ways to be Wrong*, Cambridge University Press, Cambridge, 133 pp.