

SECTION SUMMARIES

PART ONE

Hermeneutics and the Philosophy of Science

This collection of essays in honor of Patrick A. Heelan, S.J., was prefaced with an encyclopedia entry on Patrick Heelan translated by David B. Allison from *Les Œuvres Philosophiques*, the second tome of the third volume of the *Encyclopédie Philosophique Universelle*. Briefly detailing Heelan's biography, the entry includes useful summaries of Heelan's two books, *Quantum Mechanics and Objectivity: A Study of the Physical Philosophy of Werner Heisenberg* and *Space-Perception and the Philosophy of Science*, the biographical sketch and latter *précis* contributed by Heelan's own teacher at Louvain, the Belgian philosopher of science, Jean Ladrière.

The collection to follow features three sections, each corresponding to Patrick Heelan's main research interests: *the philosophy of science*, reviewed with respect to hermeneutics and phenomenology; essays on *art and aesthetics*, including issues of perception and pragmatism; and, finally, *philosophic perspectives on religion*.

Hermeneutics and the Philosophy of Science

In his precisely focal essay, "On Hermeneutics and the Philosophy of Science," Stephen Toulmin reminds us that Patrick Heelan has shown that the intellectual operations of the natural sciences embody indispensable elements of interpretation that make them effectively "hermeneutic" and, contra the dominant perspective interior to traditional hermeneutics, Heelan was able to make this case for Hans-Georg Gadamer directly. It is important to make this preliminary point because it is not the case, as one might think, that continental philosophers support a hermeneutic or phenomenological philosophy of science, whereas the analytic majority might be thought to be conservatively against the same. Scholars instead seem to share similar prejudices on both sides of the analytic-continental divide. Many continentally minded scholars, including students of Gadamer as well as members of the Frankfurt school, have tended uncritically to assume the essential rightness of a naïve positivism in the philosophy of natural science. Nor are their analytic colleagues always more nuanced, often confidently employing an aperspectival perspective to support a hard line opposition between Physics on the one hand, and History or Sociology on the other. Toulmin observes that Heelan avoids such oversimplification, but raises the question of the continuing appeal of such a dead-end track for so many philosophers.

In his essay, "Experimental Life: Heelan on Quantum Mechanics," Robert Crease argues that Heelan's continentally-inspired work revitalizes the foundations of

philosophy of science overcoming the impasses of analytic approaches. Crease makes this case via a biographical account of the genesis of Heelan's philosophic thinking, from physics to philosophy. Thus Crease recounts that Heelan's earliest work concerned Heisenberg's philosophy of quantum mechanics. Subsequently, Heelan generalized the approach he had worked out for quantum mechanics into a context logic with both Heideggerian and Husserlian elements. The Heideggerian aspect corresponds to the circumspective role of context or world, to use Heelan's classically hermeneutic phenomenological terminus from his first study, *Quantum Mechanics and Objectivity*; while the Husserlian dimension provides the rigor of the noetic-noematic structure of object constitution which Heelan later develops in his *Space-Perception and the Philosophy of Science*. This context logic in every sense, both literal and conceptual, plays a prominent role in Heelan's later work, and has much to offer in explaining the so-called paradoxes of quantum mechanics, but also visual illusions, social phenomena, and perhaps most fruitfully in the nature of experimentation.

In his essay "The Hermeneutic Context of Constitution," Dmitri Ginev draws upon Heelan's "strong hermeneutics of science" to mark a path overcoming the traditional context-distinction in the philosophy and history of science. At stake in the distinction Heelan makes between weak and strong hermeneutics of natural science is the issue of the possibility of an interpretative-ontological approach to the rationality of science. Opposing both normative epistemology and the deconstruction of epistemology, Ginev treats the hermeneutic *context of constitution* as an alternative to the context of justification and the context of discovery. Ginev himself thus exemplifies an approach opposing both the reification of scientific knowledge and the "post-epistemological" conceptions of science-as-practice. At stake is the possibility of a context in which one may carry out studies of the practical constitution of science's cognitive specificity.

Ragnar Fjelland, in his essay on "The 'Copenhagen Interpretation' of Quantum Mechanics and Phenomenology" begins with the claim that much publicized attack on (the Copenhagen Interpretation of) Quantum mechanics in the Science Wars was not merely an incidental casualty of the old rift between the "two cultures" but endemic to conceptual history of quantum mechanics. For Fjelland, quantum mechanics and phenomenology have rather more in common than superficially being a common target for such attacks.

Babette E. Babich, in her essay, "The Hermeneutics of a Hoax: Physics and the New Inquisition," expresses complementary sympathies. From the perspective of a philosopher, it is important to attend to the self-reflective weaknesses of the culture of physics as well as those of physics-dominated philosophy of science. Echoing some of the criticisms and highlighting the points of social advocacy of the late Paul Feyerabend, the essay underscores the dangers for a society (and for science) which insists on maintaining science in uncritical esteem.

In "Wittgenstein, Hertz, and Hermeneutics," Allan Janik reminds us that in all its phases Wittgenstein's philosophizing bears a striking resemblance to hermeneutics, despite its alien character with regard to classical hermeneutics. Janik uncovers an explanation for this in the strategy for "dissolving" philosophical problems by the expedient of "showing" the inherent limitations of our representations of reality Wittgenstein appropriated from Heinrich Hertz. This Hertzian hermeneutics figures essentially in all of Wittgenstein's philosophizing from his earliest days until his death in 1941. Bringing out the links between Hertz's technique of presenting

alternative representations of mechanics to clarify its conceptual problems and Wittgenstein's mature method for dissolving philosophical problems permits Janik to dismiss the charges of irrationalism and obscurantism leveled against Wittgenstein and to replace them with an account of the scientific origins of his mature view of the nature of philosophy, a nature more in accord with hermeneutics than ordinarily imagined.

Writing on the very theme: "On the Interpretive Nature of Hertz's Mechanics," Joseph Kockelmans reviews the results of his own lengthy historical and critical, philosophical investigations concerning some aspects of Hertz's contributions to classical mechanics. Kockelmans' report reflects a lifetime of critical, philosophical reflections on the history of the natural sciences, specifically physics, in which Kockelmans, like Heelan and like Kisiel, has sought in a systematic manner to develop a hermeneutic phenomenology of natural science. In the wake of such an investigative reflection, Kockelmans, argues that the natural sciences are genuine, interpretive endeavors, permitting one to speak of the hermeneutic nature of natural science.

Robert Scharff's "Comte and the Possibility of a Hermeneutics of Science," argues in opposition to a still perduring conviction that Auguste Comte's positivism does not support the "rational reconstruction" of the scientific method. Scharff further claims that the "pragmatist" character of his arguments against such positivist reconstructions distinguishes Comte's treatment of science from later positivism. For Scharff, Comtean and postpositivist philosophy involves thinking *about* science – i.e., reflecting on scientific practice as one human activity among others, not just analyzing its cognitive structure from within. Insofar as Comte still advocates a philosophy of science that gives a historically reflective defense of itself, Scharff demonstrates that a rethinking of Comte's positivism can help clarify what is at stake in a hermeneutics of science.

With his challenging title, "*Was heißt das – die Bewandnis?: Retranslating the Categories of Heidegger's Hermeneutics of the Technical*," Theodore Kisiel seeks to review some basic features of a cultural hermeneutics of the natural sciences by way of a factual philosophical dispute that allows us to draw a sharp contrast between Carnap's positivism and Heidegger's phenomenology, especially in their respective relations with neo-Kantian philosophy of science. Heidegger's contrast between the ethos (usage, custom, practice) of *Ge-Stell* (artifactual com-positing) and of *Bewandnis* (appliance) constitutes a brief illustration of "technical practice," examined from the perspective of a hermeneutic phenomenology, providing a paradigm for the examination of the personal, political, social, and other forms of the ethos operative in these practices.

Thomas Seebohm offers a review of the so-called second canon of hermeneutics in his essay, "On the Hermeneutic Circle: Wholes, Parts, and an Attempt to Solve its Paradoxes." Seebohm observes that hermeneutics is plagued by paradoxes and ambiguities in its application – including the terms of this canon: whole and part, the hermeneutic circle, etc. Seebohm first sketches several such difficulties in the history of hermeneutics. Subsequently, Seebohm offers an analysis of the formal problems of the formula and then suggests an unambiguous formula with the aid of the phenomenology of wholes and parts, concluding with a discussion of its application.

Reviewing "Husserlian Hermeneutic: Mathematics and *Theoria*" Richard Cobb-Stevens invokes two themes from the later works of Husserl to suggest ways of correcting what he regards as the contemporary imbalance between interpretation and

cognitive intuition. In *The Crisis of European Sciences and Transcendental Phenomenology*, Husserl adopts a specifically historical approach to the development of modern philosophy, stressing how Vieta's invention of algebra and Galileo's subsequent mathematization of nature transformed the traditional philosophical understanding of *theoria*. By contrast, in *Formal and Transcendental Logic*, Husserl reviews the role of axiomatic systems in modern theory formation and suggests a way of coordinating a properly hermeneutic understanding of theory formation with the ancient notion that theory is ultimately founded upon insight into the forms of things.

John Cleary's digest of his historical or hermeneutic book-length *tour de force* on "Aristotle's Philosophy of Mathematics" adumbrates the argument that Aristotle's philosophy of mathematics cannot be understood on the terms of our modern debate regarding the foundations of mathematics: e.g., abstractionist, logicist, formalist, or intuitionist. For Cleary, unless we restore Aristotle's puzzles regarding mathematics to the appropriate context of a debate interior to Plato's academy concerning the claims of mathematics or physics as the supreme science of cosmology, we cannot understand Aristotle's philosophical perspective on mathematics. This context provides the rationale for Aristotle's insistence that mathematics is not about separate Platonic objects but about aspects of this sensible world logically separated for scientific study. In effect, although physical objects are ontologically prior to mathematical objects, the science of physics and mathematics are parallel in logical and epistemic structure.

Wolfe Mays, in "Piaget and Husserl: On Theory and Praxis in Science" reviews Piaget's historico-critical approach to the philosophy of science in which the interpretation and construction of scientific concepts in their historical perspective is studied by situating this approach in relation to Husserl. Mays then examines his attempt to relate this to the development of our pre-scientific concepts, comparing Piaget's approach with philosophers of science like Kuhn who take account of the part played by historical and social factors in determining the progress of scientific thought, and thus refuse to draw a sharp distinction between discovery and justification. Mays examines recent attempts by some philosophers with phenomenological leanings to apply the hermeneutic method to the study of the natural sciences, uncovering the extent to which Piaget's work follows a similar pattern.

Tony O'Connor, in "Human Agency and Social Sciences," makes the case that Foucault can assist appreciation of some philosophical implications of the phenomenological and hermeneutic emphasis on the historical conditions of thought and action in connection with the problem of the determination of the conditions of the possibility of the social sciences. O'Connor argues that a central feature of the thought of Husserl, Heidegger, and Merleau-Ponty, namely, that universal claims are made on the basis of cognitive, historical, or embodied evidence, may best be understood in terms of particular cultures and as part of interpreted traditions.

For John J. Compton, in "Toward a Phenomenological Philosophy of Nature," prior to any study of nature it is important to remember our inevitably phenomenological point of departure. Thus for Compton, we engage the natural world in all manner of daily ways long before we ever come to hear of science. Compton thus argues that there is an inquiry – which we may properly call the "philosophy of nature" – that aims to evoke our pre-scientific understanding of nature and, in a continual dialectic with developing scientific concepts and practices, to show how these concepts and practices may be seen to *refer back* to the pre-scientifically known world and how

they re-present the pre-scientific world in ways that must be seen, in the end, to be *coherent with* fundamental features of that world. As part of this agenda, Compton offers examples from physics, biology, and cognitive neuroscience.

John Ziman, in his essay, "No Man is an Island," notes the inadequacy of the traditional philosopher's solipsist "first-person" view of the world. Famously, this view has great difficulty in accounting for the "other minds" that it needs to complete itself. By supposing as a given the knowledge of each other and of shared existence that people develop in infancy, Ziman's essay explores the philosophical, psychological, and sociological implications of treating *intersubjectivity* as a primitive fact of life, on the same (as yet unexplained) terms as individual consciousness. Although intersubjectivity is not the key to all understanding of the world, it plays a much more varied and important role than is usually recognized.

Rom Harré observes that the bare bones logicism that dominated philosophy of science in the fifties and sixties has given way to a much richer conception of the way science is created as a cognitive enterprise as the point of departure for his essay, "Science as the Work of a Community." For Harré, Patrick Heelan has been one of the contributors to this enrichment by drawing in to the discussion philosophical traditions other than the orthodox Russellian logicism. Other sources too enrich this discussion and the plain humanity of scientists is also revealed in the fact that they, like the rest of humanity, are social beings. Science is not the work of automata, programmed with something called "scientific method." Others, having realized the essential role of concepts and linguistic conventions in how we see the world, have moved to the other extreme, treating both the world and our knowledge of it as social constructions but Harré attempts to find a point of view which acknowledges the discipline of logic without falling into the paradoxes of logicism and which acknowledges the constructive role of concepts and the influence of the scientific community both on their origins and how they are employed without sliding into the nihilism of post-modernism.

Hermeneutic Philosophy of Science, Van Gogh's Eyes,
and God

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