

Sporting Knowledge

Gunnar Breivik

The problem of knowledge has been discussed in philosophy since Early Greek philosophy. Central problems were raised by Plato and Aristotle that have been at the core of *epistemology* as one of the central philosophical disciplines. The goal of the Greek philosophers was to secure timeless truths – *episteme* – as opposed to mere opinions among people – *doxa*. Scepticism was a serious challenge in Greek philosophy as well as modern philosophy. René Descartes' basic aim was to secure true knowledge that could withstand scepticism. The rationalists (Descartes, Gottfried Leibniz, Baruch Spinoza) and empiricists (John Locke, George Berkeley, David Hume) discussed whether perception or thinking could best provide true knowledge. Also, in present-day discussions in epistemology one of the most important tasks is to defend knowledge against the threat of scepticism.¹

The discussion of knowledge in epistemology takes knowledge in a narrow sense, mostly centred around problems relating to theoretical or propositional knowledge. However, Aristotle discussed *praxis* and *techné* as knowledge forms. The practical knowledge of politics and the technical knowledge displayed in art and handicraft are different from theoretical knowledge. In modern philosophy, the practical knowledge forms have received more attention. The discussion of 'knowing how' versus 'knowing that' in analytic philosophy, as well as the discussion of various forms of practical knowledge in phenomenology, have widened the perspective of knowledge and introduced a broader conceptualization.

Sport is a practical activity and it is no surprise that the discussion of theoretical epistemological problems in sport has received little attention. Sporting knowledge is, however, strongly related to practical knowledge, to the discussion of know-how, learning and skill. Therefore, this essay will deal mostly with the various forms of practical knowledge displayed in sports. However, with the strong development of sport sciences since the 1970s, the discussion of theoretical knowledge has become more important to sport philosophers, mostly as a 'philosophy of sport sciences'. In this essay, I will therefore start with a short discussion of the development of sport sciences and then go into the more specific problems relating to practical sporting knowledge.

Conceptual Clarification

Epistemology can be defined as 'the study of the nature of knowledge and justification; specifically the study of a) the defining features, b) the substantive conditions, and c) the limits of knowledge and justification'.² This general

definition allows for different kinds of knowledge. Propositional knowledge states that something is so and so. This type of knowledge may be empirical (a posteriori) or logical and mathematical (a priori) knowledge. Philosophers also mostly accept knowledge that is non-propositional, like knowledge *by acquaintance* or *by direct awareness*. Some philosophers, like Robert Audi, distinguish between knowledge *de dicto*, about propositions and facts, and knowledge *de re*, about objects and their properties.³ In addition, an important form of knowledge is self-knowledge or knowledge *de se*. A special kind of knowledge, which is important in sport, is knowledge of *how to do* something.⁴

This means that as a sportsperson I have direct knowledge of myself, who I am, my abilities and so on (knowledge *de se*). Furthermore, I know how to do things in my sport, I have certain sporting skills (know-how). I also have direct knowledge of my sports equipment (knowledge *de re*). I also have direct knowledge of fellow athletes (knowledge by acquaintance). I also know things about my sport, how it developed, its rules and so on (propositional knowledge). I also have a lot of experience, both episodic memories of past events and experiences, that predisposes me to behave in certain ways in different situations. As we will see later, a sportsperson also has a lot of background knowledge that lets him or her find meaning and behave in relevant ways in different situations. If one looks at sports today, especially at a higher level of sports, one finds a lot of knowledge developed by scientific research and, not to forget, thousands of hours of experience, accumulated by athletes, their coaches, leaders, service people, team doctors and so on.

Sporting knowledge is thus diverse and of many kinds. Some of the knowledge is explicit, but much is implicit or tacit. In what follows, I will not be able to cover the whole domain of sporting knowledge, so I have selected some of the most relevant topics and issues. Since sport is a practical bodily activity, it is reasonable that the main focus be practical knowledge.

1. Theoretical Knowledge

The Development of Sport Scientific Knowledge

According to John Massengale and Richard Swanson,⁵ the various sport scientific sub-disciplines had their origins towards the end of the 19th century, their first organizational events took place after the Second World War, and the development of the specific sub-disciplines with their international organizations finally happened in the late 1960s and early 1970s. During the 1960s, many sport scientific sub-disciplines were developed and gained some independence and identity in relation to their mother disciplines (sport psychology, sport sociology, exercise and sport physiology and so on). At the Pre-Olympic Scientific Congress before the Munich Olympics of 1972, the German philosopher Hans Lenk gave a presentation on the philosophy of sport as a field of study⁶ and described the quite different philosophical interpretations of sport by philosophers, authors and commentators. Shortly after the Munich conference, *The Philosophic Society for the Study of Sport* was founded in the United States in 1973 and the first scholarly sport philosophy journal, the *Journal of Philosophy of Sport*, appeared a year later.

From the 1970s onward, sports sciences developed differently in different countries. In some countries they were organized as a specialty or a sub-discipline of a mother discipline. In other countries specific sport scientific schools were set up, educating people to various professions, like sport manager, sport psychologist, sports coach, outdoor life instructor, physical education teacher, researcher, fitness instructor and so on.

As sport sciences were developed in teaching as well as research, at colleges and universities in various countries in the 1980s, the need for clear paradigms and organizational efficiency became pressing. In this regard, Karl Newell made an important distinction between two fundamental types of knowledge, called 'declarative' and 'procedural'.⁷ Declarative knowledge encompasses theoretical knowledge related to activity-cognate sub-disciplines, but also to practitioner knowledge, which 'is associated with the role of a specific professional activity (such as teaching, coaching, etc.) and might be viewed generally as practical competence'.⁸ Procedural knowledge is related to what one can execute as a practical act or behaviour. We will come back to this type of knowledge later.

The search for relevant paradigms also included efforts to counteract the increasing split between different sub-disciplines and the separation of theory and practice. Roland Renson discussed various models in the United States, France, Germany, Great Britain and the Low Countries, and suggested an integrated model for the 'Study of Man in Movement'.⁹ Renson's idea was to include sport, play, work and exercise into the new integrated science of *kinanthropology* and he distinguished between several cross-disciplinary areas like developmental, differential, social-cultural, clinical and agogical approaches and connected this with a practice-based or professional application. Since these efforts in the early 1990s, it seems that the sport-related programmes at university level have developed in different directions. In some countries, many practice- and skill-based knowledge areas have been outsourced to practical experts. Activity-related research has since then lost its academic foundation.

In general science as well as in sport sciences, the standard account of knowledge has been the model developed in relation to the most advanced natural sciences, like physics. In the standard account, knowledge is defined as 'justified true belief'. It holds, according to Jonathan Dancy, that 'a knows that p if and only if 1) p, 2) a believes that p, 3) a's belief that p is justified'.¹⁰ During the 19th century, the goal of the natural sciences was to establish true objective knowledge by verification of eternal causal laws. In the 20th century, Karl Popper, Thomas Kuhn, Imre Lakatos and others contributed to more contextual views of science and accepted the differences between natural sciences, social sciences and humanities. Parallel developments in philosophy, epistemology and theory of science led to views amenable to relativism, constructivism and even deconstructive theories.¹¹ We see the results of this development in two recent books that show that philosophy of science has now entered the philosophic discussion of sport. In *Philosophy and the Sciences of Exercise, Health and Sport*, edited by Mike McNamee, scholars from various disciplines and fields of study discuss various problems in the philosophy of science in relation to sport.¹²

The most encompassing discussion of philosophy of science in relation to sport sciences has been presented by Graham McFee in his book *Ethics, Knowledge and Truth in Sports Research*.¹³ It deserves a short discussion. McFee's book has a special focus on social sciences and humanities. He rejects 'an ahistorical and universal "one right answer" conception of truth which drives many scientific misconceptions concerning research into human situations, including setting inappropriate goals for social science'.¹⁴ McFee discards both scientism and postmodernism and instead, inspired by Ludwig Wittgenstein, he develops *contextualism* as his position. From a contextualist perspective, the search for truth is meaningful, but only relative to a certain social and historical context. For instance, scoring a goal in football is only meaningful relative to a context where football is developed in a certain way to make the scoring of goals meaningful and true.

For McFee, explanation in social sciences and humanities takes the form of intentional explanations: 'The intentional explanation of an event depends on how the event is appropriately characterized (and such like) by its agent'.¹⁵ Therefore the 'world' of social sciences is not determined by exceptionless laws and strict causality, where one can predict future events on the basis of these laws. Whereas in natural sciences one can set up a finite set of causal factors to explain what happened, such a thing is impossible in social sciences. McFee's position leads to a form of naturalism, which means that persons must be studied in natural contexts. More important than a distinction between quantitative and qualitative methods is a distinction between those who take people seriously as research subjects and those who do not.

2. Practical Knowledge

Sport Philosophy and Knowledge: the Beginnings

The connection between sport and knowledge has a background in Greek ideas. In the incipient sport philosophy of the 1970s the subject was raised again by several authors.

In his article 'A Fine Forehand', Paul Ziff raised some questions that Margaret Steel and Spencer Wertz later developed and tried to answer.¹⁶ Ziff asked us to imagine a coach that tells a tennis player that he is not bending his knees enough when hitting a forehand. In many cases, athletes seem not to be aware of, or not know precisely, their bodily position and where their limbs are. How is it with this 'knowledge without observation'? How do players manage to remember the positions of their body?

Steel went directly into the problem of what is happening when we learn a new sport.¹⁷ She distinguished between 'inductive learning' and 'learning by exemplars'. She discarded the inductive model because it is unable to analyse the totality of a technique. Instead she used Kuhn's idea of paradigms and maintained that we learn a sport in a similar way to how we learn a paradigm in science. In order to learn a science, one must identify the specific science and its disciplinary matrix, and one must be presented with an exemplar of the practice of such science. Similarly, to learn a sport one needs to learn what the sport is about, its paradigmatic totality and what it means to take part in the sport. There is, therefore, a distinction between the specific movements, skills and techniques that one must learn and the

totality of a performance as an instance of that sport. During the process, the learner must be guided by 'gestalts' presented by the instructor or other sportspersons as role models. Accordingly, 'sports and games are acquired by demonstration, and not by teaching in the sense of being told'.¹⁸ In contrast to science, knowledge in sport is not knowledge of facts but rather of gestalts and processes.

Wertz followed up on the questions posed by Ziff and Steel.¹⁹ Wertz distinguished between two theories about knowledge in sport. The 'result theory' is used when players only look at whether they succeed in what they aim to do. The other theory is called the 'feel theory'. Here the focus is on the feeling one has when executing a movement. Some athletes try to memorize this feeling in order to succeed over time. Wertz refers to Timothy Gallwey and examples from good tennis players who focus on feeling rather than result. But this feeling is not an inner feeling. It is not like, say, the feeling of confidence. It is the feeling of a bodily movement. There is, thus, a difference between an emotional feeling and a bodily feeling. The bodily feeling, in turn, can be a perceptual feeling or a feeling as a sensation. In contrast to the more specific sensation, say in one's hand, the perceptual feeling is a totality, a gestalt. Wertz here followed Steel and the idea of a paradigmatic learning by exemplars. He called this 'the skill model'.

Ziff, Steel and Wertz in various ways brought the practitioner into view and looked at how we come to know a sport and become proficient in it. Scott Kretchmar then brought a new twist to the discussion.²⁰ He argued that, instead of being absorbed in concrete involvement, 'athletes commonly achieve a uniquely human distance from their sport environment by reason of abstract thinking engaged in by these performers during play'.²¹ According to Kretchmar, human behaviour is characterized by intentional activity where we can distance ourselves from the immediate surroundings and focus on certain objects, goals or things to do, and thereby open up a space of possibilities for thinking and action. This opening up of possibilities is developed on the background of absorption. Thus 'there is nothing inherently incompatible between spontaneous, "thought-less" play and distancing'.²² Kretchmar builds on Martin Buber, Maurice Merleau-Ponty and Michael Polanyi, and discusses especially how athletes receive 'multiple invitations to act' and how distancing makes possible the most relevant and most functional choices, among these invitations. Kretchmar seems to argue for a form of 'thinking' in sports practices that is of its own kind. 'Distancing, it was shown, does not necessarily produce knowledge. Nor does it inherently beg for the use of language. The "medium of exchange" in sport is "feel," and meaningful distinctions in this realm typically outrun any verbal ability to refer to them.'²³ Accordingly, Kretchmar maintains that athletes have their own 'brand of thinking'. It is obvious that this thinking does not result in knowledge of the common kind. It rather seems to be a sort of thinking in doing or thinking in playing.

'Knowing that' and 'Knowing How': Gilbert Ryle as Sport Philosopher

The sport philosophy authors of the 1970s who wrote about knowledge in sport already had access to the works of Ryle and Polanyi. In his book *The Concept of Mind*, Ryle made the important distinction between *knowing how* and *knowing*

that.²⁴ His point of departure is ordinary life. Whereas science and philosophy typically discuss the nature, source and credentials of theories, in ordinary life 'we are much more concerned with people's competencies than with their cognitive repertoires'.²⁵ When we describe people as knowing how to do something, we normally imply that they perform well, that they perform correctly or efficiently. According to what Ryle called the *intellectualist legend*, knowing how could be assimilated to knowing that 'by arguing that intelligent performance involves the observance of rules, or the application of criteria'.²⁶ This means that an agent first has to go through an inner mental operation producing maxims or rules for what to do and then apply these rules in the execution of the performance. Ryle criticizes this view by maintaining that many performances, for instance jokes, show intelligence but no rules. More importantly, the idea of inner operations in accordance with rules would lead to an endless regress since in order to perform the inner operation correctly one would need new rules in order to perform the inner operation right. Therefore, Ryle concludes: 'Efficient practice precedes the theory of it; methodologies presuppose the application of methods.'²⁷

Performing something intelligently, therefore, does not mean first considering rules or prescriptions and then executing it according to the rules. Ryle gives the example of learning to play chess where a novice would gradually, with the help of an instructor, learn the rules and become skilled. He might then play without being aware of the rules or thinking about them at all. 'At this stage he might even have lost his former ability to cite the rules. If asked to instruct another beginner, he might have forgotten how to state the rules and he would show the beginner how to play only by himself making the correct moves and cancelling the beginner's false moves.'²⁸ This means that a person's ability to play chess is verified by his playing chess and not by hidden operations in his or her head or whether he is able to describe the rules. Ryle does not deny that one can have inner thoughts, inner operations of the mind, but he maintains that the inner operation has its own success criteria.

Ryle also makes a distinction between *habit* and *intelligent practice*. 'It is of the essence of merely habitual practices that one performance is a replica of its predecessors. It is of the essence of intelligent practices that one performance is modified by its predecessors. The agent is learning.'²⁹ This is typical for elite sport since athletes are all the time trying to *optimize* their performance in contrast to daily life where *satisficing*, showing acceptable performance, is good enough to get by.

Another important distinction is between theory and practice. 'A man knowing little or nothing of medical science could not be a good surgeon, but excellence at surgery is not the same thing as knowledge of medical science; nor is it the product of it.'³⁰ The surgeon must have learned by theory and by practice. One may be good at practising but bad at theorizing and vice versa.

Both knowing how and knowing that come from learning, but not in the same way. 'Learning *how* or improving in ability is not like learning *that* or acquiring information. Truths can be imparted, procedures can only be inculcated, and while inculcation is a gradual process, imparting is relatively sudden. It makes

sense to ask at what moment someone became apprised of a truth, but not to ask at what moment someone acquired a skill.³¹ To have a skill or be skilled is thus to have acquired a stable disposition to perform an act at a certain level. To be skilled admits of grades, but normally higher levels are implied.

Michael Polanyi: Personal Knowledge

After Ryle had made the distinction between knowing how and knowing that, Polanyi introduced the distinction between *personal* or *tacit knowledge* as opposed to *objective* or *scientific knowledge*. Polanyi criticized the traditional objective view of knowledge and maintained that even in the natural sciences there is a 'personal participation of the knower in all acts of understanding'.³² According to Polanyi, this does not make science subjective, but it means that the subject relates to the objective world with passion, interest and the indeterminacy and probabilities that such a relation entails. It is, however, on the personal knowledge that is displayed in the practice of skills that Polanyi makes a lasting contribution.

Polanyi introduces the idea of unconscious rules that has been much discussed recently. He maintains that 'the aim of skilful performance is achieved by the observance of rules which are not known as such to the person who is following them'.³³ For instance, the swimmer adheres to the rules and laws of nature that must be followed if one wants to keep oneself afloat and move forward through the water. Even better known is the example of cycling, used by Peter Hopsicker and others. According to Polanyi, cyclists observe rules unknown to themselves. 'When he starts falling to the right he turns the handlebars to the right, so that the course of the bicycle is deflected along a curve towards the right.'³⁴ But this kind of rule is different from a rule that can be obtained by a biomechanical analysis, like 'for a given angle of imbalance the curvature of each winding is inversely proportional to the square of the speed at which the cyclist is proceeding'.³⁵ The cyclist does not know this last analysis or at least does not follow the result of the analysis. A biomechanical analysis can be useful but it does not determine how to execute the act of bicycling. Such analysis can at best be integrated with the practice.

Especially relevant for the discussion of performance in sports is Polanyi's distinction between two types of awareness: 'When we use a hammer to drive in a nail, we attend to both nail and hammer, *but in a different way*. We watch the effect of our strokes on the nail and try to wield the hammer so as to hit the nail most effectively.' By executing the stroke 'I have a *subsidiary awareness* of the feeling in the palm of my hand which is merged into my *focal awareness* of my driving in the nail'.³⁶ The feeling in the palm of the hand is subsidiary and thus instrumental in bringing about what the person focuses on and aims at. There is thus a *from-to* movement of one's awareness, away from the subsidiary to the focal. Polanyi then extends this distinction to the relation between the body and the surrounding world. The hammer or the blind person's stick is an extension of the body and it may be experienced as parts of the body. Polanyi says that 'We pour ourselves out into them and assimilate them as parts of our own existence. We accept them existentially by dwelling in them.'³⁷ But Polanyi later adds that

through this process we render these instruments unconscious. We become unconscious of how we use a racquet in tennis. But we become conscious of the target. Thus, we have three factors operating: the knower, the focal targets and the subsidiary particulars. Polanyi calls it *dwelling* when the knower has a tacit awareness of the subsidiaries and a focus on the target or purpose of the movement. If there is a focus on subsidiaries the performance breaks down, which happens, for example, when a pianist starts watching his fingers.

But dwelling is not enough. 'Moving to higher levels of skilful performance requires one to move beyond dwelling within the triad of subsidiary awareness, focal targets and personal integration. A conscious effort is needed to acquire knowledge and skilfully apply it.'³⁸ In order to reach higher performance levels, one needs goal-directed striving by a combination of intuition, imagination and ideas. 'Through intentional striving by performers, the imagination actively casts forth potential ideas and solutions to confronted challenges. This latter mechanism is catalyzed through one's intuition which spontaneously integrates subsidiaries to create explicit solutions.'³⁹ Thus, Polanyi has a room for tacit immediate absorption as well as creative imagination and conscious striving.

A Combination of Knowing How and Knowing That? Sigmund Loland and the Example of Alpine Skiing

The *knowing that* perspective uses theoretical knowledge to explain sport performance, whereas personal *knowing how* may help explain to the athlete why some performances succeed or fail. Can both types of knowledge be combined? Loland has presented an example of a possible combination with a demonstration from Alpine skiing.⁴⁰

Alpine skiers have personal 'inner' experiences but their performance can also be analysed from 'the outside', by coaches with video cameras. Loland asks us to 'Imagine watching a skilled skier carving round, harmonious turns down a steep mountainside'.⁴¹ The skier demonstrates good skiing technique. According to Loland, there are two alternative approaches to understanding movements of this kind: an analytic approach and a holistic approach. The analytic approach is the one of natural science with its claim to objective knowledge. The other is the holistic approach, which makes reference to the subjective experience of the skier. In contrast to the meristic view of analytic science, where a whole is just the sum of its parts, the whole in the holistic approach is a gestalt, which is more than the sum of its parts. In contrast to the theoretical mechanical laws of natural science, phenomenologists like Merleau-Ponty and Hubert Dreyfus are better equipped to give a description of the 'know-how' of the skilled skier. But the holistic view also has its limitations, according to Loland, since holists are not able to present theories that are open to empirical testing and other requirements of traditional scientific methodology. Holistic findings, therefore, need to be discussed and defended on the basis of rational arguments. One could think that the two approaches complement each other or are able to be integrated into a broader framework. Instead, Loland presents them as alternative positions with distinct methodologies inside what he calls an open possibilist framework.

1. Phenomenological Knowledge

Martin Heidegger and Knowledge

In addition to Ryle and other analytical approaches to knowing how, many philosophers in the phenomenological tradition have discussed the problem of knowledge in relation to practical activities like sports. A recent book, *Phenomenological Approaches to Sport*, edited by Irena Martínková and Jim Parry, shows the many new approaches to sport philosophy coming from phenomenology.⁴² The works of Heidegger and Merleau-Ponty have many implications for sporting knowledge.

Husserl is the founder of phenomenology.⁴³ Husserl wanted to develop an exact science where the goal was to give a precise description of the essential structures (*das Wesen*) of the phenomena that showed themselves to the subject. The phenomenological description was obtained by moving away from the empirical reality and the individual variations of phenomena, and concentrating only on the essences (*eidetic reduction*) presenting themselves to the intentional subject. Instead of causal explanations, phenomenologists wanted to give precise descriptions of phenomena, of their relations and meaning.

Building on Husserl, Heidegger wanted to describe the basic structures of human existence, since the human being is the entry point to an understanding of the world as such. Knowledge, whatever it is about, is always human knowledge and not God's knowledge or animal knowledge.

Heidegger defined the human mode of being (*Dasein*) as *being-in-the-world*, thereby indicating the strong bond between humans and the envioning world.⁴⁴ Heidegger's goal in his early philosophy was to reach an understanding of the basic ontological structures of the human being-in-the-world. One of these basic structures is *understanding* (*verstehen*), since humans always have an understanding of their situation in the world. The understanding is directed towards the future, since the goal is to take care of oneself in relation to what comes. By looking into the future, being aware of the past and relating to the present, the human being carries his or her life project towards death. Heidegger shows how the understanding is linked to human existence and thus defined by deep interests. We can call this knowledge a basic *existential knowledge* since it means that we understand our own existence in the world as 'being towards death'. According to Heidegger, one can hide from this insight and live like all the others do in their everyday existence, or one can live authentically, facing death and realizing one's deepest possibilities.

According to Heidegger, there are two other forms of knowledge, one theoretical and the other practical. Whereas theoretical knowledge, and especially scientific knowledge, has a high prestige in modern society, this type of knowledge is, according to Heidegger, not the primary one. Our primary mode of understanding the world is not to describe things as objects but to use them as equipment. Most of the time entities in the world are discovered in their functionality, which is taken in a very wide sense by Heidegger. 'In our dealings we come across equipment for writing, sewing, working, transportation, measurement.'⁴⁵ That which makes things suitable for such uses is what he called 'equipmentality' (*zeughaftigkeit*). The carpenter thus has a practical grip on the

world. A hammer is a piece of equipment; it is used in an equipmental context of hammer, nails, planks, walls, house, etc. To describe the hammer as an object with a certain form, weight, colour and so on is a secondary way of relating to it. According to Heidegger, we have, then, at least three forms of knowledge: existential knowledge, practical knowledge and theoretical knowledge.

Heidegger's idea of being-in-the-world means that humans have an immediate understanding of the environment that is developed early in childhood and onwards. Play in children gives the brain models that answer questions like 'what can I do?' or 'what is possible?' This bodily relation to the environing world is explored in extreme forms in some sports. Building on Heidegger, Breivik studied how climbers explore vertical cliffs, skydivers play with wind resistance in empty space, and kayakers dance with, and on, the waves of white water.⁴⁶ Dangerous play with the elements presupposes a knowledge of 'what I can do' and of 'how I can do it' in relation to specific natural elements. Based on long experience, some people simply understand water and how it behaves, how air resistance builds up in free fall, and how hard rock allows for finger holds and grips.

2. Maurice Merleau-Ponty and Bodily Knowledge

Heidegger described very well the practical human being, but in his theory the human body was not clearly visible and remained in the background. The hand that held the hammer, the arm and body that directed and gave momentum to the hand, disappeared. And it was not clear how the existential knowledge of being-in-the-world included the body. This was corrected by Merleau-Ponty, who showed convincingly how the human body is not only a *body-object* but a *body-subject*.⁴⁷ It is through the active body as a *medium* that we relate to the world and immediately know how to behave and handle tools.

Merleau-Ponty underlined the intentionality of the body. Central for Merleau-Ponty is that 'my body appears to me as an attitude directed towards a certain existing or possible task'.⁴⁸ This intentionality of the body is a form of knowledge that, according to Breivik, is exemplified in many ways on the sporting field.⁴⁹ For instance, the movements and positions of football players on the field are defined and solicited by the movements of the ball and the other players. It is the situation that defines the body, its movements and positions. And more than that, good football players are able to read the situation before the ball is played. Therefore, the best players tend to be at the right place at the right time. And even more than that, they are ready for the action that the situation demands.

Merleau-Ponty speaks about what he calls the body as a motor power, a 'motor project' or a 'motor intentionality'. This motor intentionality operates in various contexts as an optimizing agent. We have an ability to find the right relations to sizes and distances in our environment. 'For each object, as for each picture in a gallery, there is an optimum distance from which it requires to be seen, a direction viewed from which it vouchsafes most of itself.'⁵⁰ This involves a dynamic attitude. Merleau-Ponty calls it 'a tension which fluctuates round a norm'.⁵¹ He thinks that in general we come to grips with things by placing ourselves in them. We break forth into them and in a sense transcend into them.

It is by establishing this bond that we can come to feel what the optimal grip is and explore the various perspectives of whatever we are dealing with.

Merleau-Ponty gives several examples of this motor understanding of the world. For instance, when driving a car one can see that one can get through an opening without having to compare the width of the opening with the outline of the car. Through our bodies we thus have a knowledge about the world that is implicit and that makes it possible to move around efficiently. Merleau-Ponty also distinguishes between *body image* and *body scheme*. Body image is the passive view 'from the outside' of how I look and behave. Body scheme is the operative body experienced 'from the inside' that makes me aware of 'what I can do'. Brian O'Shaughnessy further elaborates on this and notes that through our body scheme we know 1) what is possible for me now, 2) what I can do at my best, and 3) what is possible for experts.⁵² This is very relevant in relation to sports. It seems that as people reach higher performance levels they get more precise understandings of what they can do now, at their best, and what the very best athletes can do.

Building on the work of Samuel Todes, Breivik also underlines the importance of the basic bodily orientations in space.⁵³ Humans always know whether they are balanced or not, where they are directed. The vertical space with gravity forces limits our movement upwards, whereas the free 360-degree horizontal space opens up for movement in many directions. Todes calls the intention of the active body its *poise* in dealing with things and distinguishes it sharply from the *pose* of the inactive body.⁵⁴ As soon as I am poised, I know what I am doing and I know about the surrounding objects. Poise is therefore both the internal coordination of the body and the skilful handling of things and persons around us.

This fundamental bodily knowledge of how we are oriented in space and how we interact with the surroundings is mostly a form of tacit knowledge. It is, as Heidegger claimed, only in situations of 'breakdown', where things do not function as expected, that we become aware of our normal well-balanced relations to the surrounding world.

3. Hubert Dreyfus: Critique of Cognitivism and the Importance of Background Knowledge

Dreyfus builds his philosophy on Heidegger and Merleau-Ponty but develops phenomenology in his own direction. Dreyfus' book *What Computers Can't Do: The Limits of Artificial Intelligence* was first published in 1972.⁵⁵ Here Dreyfus attacked the computer models of how the human mind works, arguing that the human mind is not a computer. The mind does not relate to the brain as software to hardware. Humans have capacities that computers lack, like elegant walking, telling jokes, building violins, expressing feelings or making innovations. The expert knowledge used by the best violin makers, like Antonio Stradivari and Andrea Guarneri, was tacit and intuitive. For instance, the computer programs that are used by artificial intelligence experts are not able to catch the complexity and fine discriminations that are needed to select the right material to build a violin. Dreyfus' critique of cognitivism and computer models was followed up by Vegard Moe.⁵⁶ He makes a strong critique of cognitivism and the information-

processing models that have dominated research in motor control and learning. Moe's key term is *intentional movement*. His premise is that movements in sport are intentional actions. Cognitivism instead assumes '1) that athletes are processors of information, and 2) that intentional movement is set up in advance by one or several motor programmes'.⁵⁷ Moe maintains that, instead of relating to cognitive representations or executing motor programmes, athletes deal with the surroundings directly in an absorbed and non-representational manner. Sport is thus an extension of our daily dwelling in the world. Movements in sport are intentionally directed at bringing about certain states and the way success is reached is a sign of how skilled the behaviour is.

In accordance with the phenomenological tradition, Dreyfus underlined the importance of experiential knowledge and how expertise is built on long and varied practice. Together with his brother, Dreyfus studied how airline pilots reached the highest performance level. With input also from activities like chess and sport, the Dreyfus brothers developed a five-stage skill model that showed how performers went from novice to expert level. At the beginners level, practitioners learn by instruction and by following rules. With more experience, they become able to make finer discriminations and act according to variations in context and situation. At the expert level, practitioners perform with direct intuitive reactions to the relevant features of the situations without using rules, concepts or mental representations of any kind. Experts are characterized by 'absorbed skilful coping'. As we will see later, this model has been heavily debated by sport philosophers.

Dreyfus underlines the importance of 'background knowledge' both in daily situations and in sport. The gestalt theorists thought that a figure is impossible without a background. Similarly intentions are made possible by various forms of knowledge, which has accumulated through a person's life and which is dependent upon the experiences and kind of life the person has had. It is this complex and vast area of knowledge that is impossible to model in a computer program and that makes computers unable to perform even seemingly simple daily-life activities. The situational and environmental background is lacking.

Dreyfus here got support from his philosophical adversary, but personal friend, John Searle, who from his analytic point of view underlined the importance of background knowledge in intentional actions. Moe has shown how Searle and Dreyfus shared some common viewpoints and how they differed in others. According to Searle, an intentional state is related to other intentional states in a 'Network' and is dependent upon a certain 'Background'. According to Moe's interpretation of Searle, 'the Background is a set of "nonrepresentational" or "preintentional" "mental capacities" that provides the preconditions for intentional states'.⁵⁸ The idea is that 'what one simply takes for granted fits into the Background, and the things we learn through consciously acquired rules and facts fit into the Network'.⁵⁹ Whereas Dreyfus placed the background knowledge 'out there' in the environment, Searle in his later views understood the Network and the Background as 'neurophysiological brain capacities'. Searle's neurophysiological and causal approach to background capacities is therefore quite different from Dreyfus' fundamental ontology and hermeneutic everydayness.

4. Phenomenal Knowledge

According to Dreyfus, people performing at expert level are totally absorbed in what they are doing. The performance is non-conscious and non-representational. As Breivik has maintained, Dreyfus' view almost makes elite athletes look like zombies.⁶⁰ As a consequence of this, the knowledge they have must be implicit or tacit. But is this the whole story?

In a famous article, Thomas Nagel maintained that only a bat can have an experience of 'what it is like to be a bat'.⁶¹ This experience has a qualitative feel, called *qualia*. Alan Chalmers then introduced the distinction between two forms of consciousness. Whereas *phenomenal consciousness* is characterized by the experience of *qualia*, the feeling of *what it is like to be* in a certain way, *psychological consciousness* is the mental machinery that makes us perceive, decide and act. As Chalmers says, 'On the phenomenal concept, mind is characterized by what it feels; on the psychological concept, mind is characterized by what it does'.⁶² This opens up for two types of knowledge. The question is whether phenomenal consciousness is unique and whether it generates knowledge that is different from knowledge obtained from psychological consciousness. I may drive my car to work and be completely absent-minded, thinking about other things than driving and not being aware of traffic lights and what I have been doing. Obviously, the psychological consciousness, the mental machinery, is working. But what is lost when I do not attend to what I am doing? The question is related to the famous article by Frank Jackson, 'What Mary Didn't Know'.⁶³ Mary is colour-blind but has learned everything that there is to know about colours. Is there anything she has lost, from a knowledge point of view? Breivik argues that something is lost. Using examples from elite sport, Breivik maintains that elite athletes are consciously monitoring and correcting what they are doing based on conscious experience of what is happening.⁶⁴ Elite downhill skier Aksel Lund Svindal consciously experiences deviations from the optimal course in his downhill run and corrects his position. Michael Johnson consciously attends to his running and immediately corrects the next steps based on what just happened.

Following Breivik, Jens Birch argues that specific sport experiences include specific qualitative states, specific phenomenal experiences. 'These features make the experience of outdoor rock climbing unidentical to the indoor plastic climbing, even though the attention mechanisms and the mere movements might be identical. Phenomenal consciousness is not an epiphenomenon ... it is causally potent.'⁶⁵ This means that a pure physical or physiological explanation can never give the whole picture. As Birch argues, 'we can probably find mechanistic analysis for all joints in a pole vault. We could perhaps also find all neuronal events in the brain, and all forces working on the body, ground and pole. But is this identical to how it feels to do a six-metre jump? The suggestion is "no" and the reason is that the reference between the angles, the neuronal events and my feeling of what it's like does not refer both ways.'⁶⁶

Furthermore, Breivik argues that not only the conscious awareness during a competition but also the conscious planning before the competition is often overlooked in phenomenological analyses of sport. Athletes spend a lot of time

making plans, preparing, evaluating alternatives, going through things in their minds before competitions, elaborating on strategies, etc. All this includes knowledge of different kinds.

5. Neuroscience and Mirror Neurons

The neurosciences have developed fast and have generated new knowledge about how the brain works. What is called the *easy problem* is related to the brain location of consciousness states. The *hard problem* is related to how the subjective conscious experience of something (*qualia*) is related to the neurophysiology of the 'soggy grey matter' that is called the brain. The gap between the neurophysiological description of the working brain and the correlated subjective experience of a specific person defines what is called 'the explanatory gap'. Philosophers and neuroscientists are still far away from an explanation of this gap. Some philosophers, like Colin McGinn, think that our brains may not be wired in such a way that we can bridge this gap.⁶⁷

Neurophysiological research has, however, opened interesting new vistas for sport philosophers. Imitation and copying are important ways of learning skills. Neurophysiological studies have shown that imitation is founded in our brains at a much deeper level than we thought. Giacomo Rizzolatti and co-workers have found that the brains of monkeys and humans respond directly to motor actions performed by other agents.⁶⁸ When I see a person lifting her hand to her mouth to eat, I respond not only with a visual response, but a motor response that is a copy of the original one. My brain fires at the same location as the brain of the other person. The response is somehow not carried through but the motor neurons in the brain fire as if I was lifting my own hand to my mouth. This means that we have an immediate motor understanding of what other agents do. And, furthermore, it seems that it is the intentional character of the action that is important. I know immediately what the action is about and respond with the relevant intentional pattern (lift the hand to eat). So knowledge is related to intentions of other people in an immediate sensorimotor copying pattern. As Birch and others conclude, this new insight has consequences for our understanding of basic skills in sports like copying, imitation and taking the perspective of others.⁶⁹

Concluding comments

Sporting knowledge is of many kinds. I have tried to give an overview of quite different forms of knowledge and I have used different approaches that are not easily combined to a coherent whole. What is unique to sport is the form of knowledge we call know-how. Aristotle was aware of *techné*, the technical and practical knowledge needed in painting, sculpturing and manual work. But Greek philosophers and philosophy in modern times were mostly occupied with discussions of theoretical knowledge. In recent philosophy, the seminal distinction made by Ryle between knowing how and knowing that led to a discussion of various forms of practical knowledge. The discussion of the relation between know how and know that is alive and is unresolved. Intellectualists maintain that know how is a form of or is dependent on know that. Most

philosophers lean in the anti-intellectualist direction and think that these are two distinct and different forms of knowledge.

In addition to this discussion, the distinction between personal knowledge and objective knowledge made by Polanyi became important. Polanyi also underlined the tacit dimension. Most of the personal knowledge is tacit or implicit. Dreyfus had views similar to Polanyi but he came from another tradition, building his work on Heidegger, Merleau-Ponty and phenomenology. Dreyfus also underlined the immediate, direct, non-representational form of dealing with the environment. Absorbed skilful coping became a standing expression for expertise in daily life and in sport. Also, from Dreyfus' viewpoint, knowledge in sport is non-conscious. In contrast to these views, Breivik, Birch and others have maintained that it is not only the psychological machinery working on automatic pilot that plays a role in sport but also the conscious experience of *qualia*. Phenomenal consciousness thus adds something to our experiences in sport and thereby makes a specific contribution to sporting knowledge. With the introduction of the neurosciences and the new knowledge of mirror neurons, new dimensions of immediate knowledge of other persons, their intentions and actions are opened up. Maybe the understanding, especially of team sports, will be deeply changed by such new discoveries.

We saw at the beginning of this chapter that scientific knowledge has become important in sport. Since the 1970s, sports sciences have had an increasing impact on how sports, both at mass and elite level, are practised. The development of sport scientific paradigms, the organization and focus of sports sciences, will be important in the coming years, since new practitioner roles and new professions of a sports-related nature are spreading rapidly. The same is true of the global dissemination of new forms of physical activity, which have cultural ramifications. At the heart of sporting knowledge, however, lies the unique experience each of us has when, after mastering a new skill, we exclaim: 'Yes! I know how to do this!'

Notes

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- 4 *Ibid.*, 234.
- 5 The sub-disciplines mentioned are sport pedagogy, sport sociology, sport history, sport philosophy, motor behaviour, sport psychology, biomechanics and exercise physiology. See John D. Massengale and Richard A. Swanson, eds., *The History of Exercise and Sport Science* (Champaign, IL: Human Kinetics, 1997).
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- 8 *Ibid.*, 249.

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- 22 *Ibid.*, 9.
- 23 *Ibid.*, 17.
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- 25 *Ibid.*, 28.
- 26 *Ibid.*, 29.
- 27 *Ibid.*, 31.
- 28 *Ibid.*, 41.
- 29 *Ibid.*
- 30 *Ibid.*, 48.
- 31 *Ibid.*, 58.
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- 33 *Ibid.*, 49.
- 34 *Ibid.*
- 35 *Ibid.*, 50.
- 36 *Ibid.*, 55.
- 37 *Ibid.*, 59.
- 38 *Ibid.*, 83.
- 39 *Ibid.*, 84.
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- 41 *Ibid.*, 55.
- 42 Irena Martínková and Jim Parry, eds., *Phenomenological Approaches to Sport* (London and New York: Routledge, 2012).
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- 63 Frank Jackson, 'What Mary Didn't Know', *The Journal of Philosophy* 83 (1986): 291–95.
- 64 Breivik, 'Zombie-Like or Superconscious? A Phenomenological and Conceptual Analysis of Consciousness in Elite Sport', 85–106.
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- 69 Birch, 'In the Synaptic Cleft: Caught in the Gap between Neurotransmitter Release and Conscious Experience in Sport', 82.

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