

## Preface

The essays collected in this volume concern the nature of pain and the methodology of its study. They reflect the metaphysical, epistemological, methodological, and scientific—rather than the aesthetic, ethical, or religious—interests and perspectives of their authors. The volume is also a manifestation of the increasing scholarly cooperation between philosophers and various scientists who work on consciousness and emotion.

There are various puzzles about pain, philosophical as well as scientific. Any view on the nature of pain or any methodology proposed for its study has to address these puzzles. Many essays in this book address these puzzles and propose new ways of dealing with them—often quite different, indeed sometimes opposing, ways of dealing with them. It is hoped that the spectrum of views presented here will show that the field of pain research is very active and provides intellectually fertile ground for new ideas for interdisciplinary work, especially in relation to larger issues such as the place of consciousness in the natural order and the methodology of psychological research.

Pain is perhaps the most prominent member of a class of sensations usually known as bodily sensations. In his little book, *Bodily Sensations* (1962), David Armstrong divided these into two categories, transitive and intransitive bodily sensations, and put pain in the latter category. The idea was roughly to capture the fact that reporting some bodily sensations seems to involve the use of a transitive verb whose object is a sensible quality of an external object or event, like temperature or pressure. In reporting transitive bodily sensations, we seem to be doing the same sort of thing when we report seeing the color of an object or hearing a sound. We say, “I felt the warmth of his hand,” or “I feel the pressure of the stethoscope on my back.” These seem to be straightforward tactile perceptual reports on a par with the visual, auditory, gustatory, or olfactory reports by which we report the perception of something external to our minds.

Intransitive bodily sensations, by contrast, pose a puzzle. When we report them, even though we sometimes seem to be reporting the perception of something, many think that either we are not making a perceptual report, or if we are, what we are perceiving is not something external to our minds. Consider for instance reporting an itch or tingle in part of one's body, or take the standard practice of reporting pain in a bodily location. Even though we sometimes use a sentence where the verb seems transitive, as in "I feel a sharp pain in my right thumb" or "I feel my back itching," reporting an itch, a tingle, or a pain can be done by using intransitive verbs, as in "My back is itching" or "My right foot is tingling," or "My wisdom tooth is aching." We also typically locate pains, itches, and tingles in body parts by saying things like "There is a pain in my thigh" or "There is tingling in my arm," and so forth.

It is part of the commonsense conception of pains, itches, and tingles that they can't exist without someone's feeling them—quite unlike the qualities of physical objects or events we can sense or perceive. In this respect, saying that we feel a pain, an itch, or a tingle seems very unlike saying we feel the temperature or pressure of something. The heat or pressure applied to my skin can exist without my feeling them, and when I do feel them they can be perceived (felt) by others in the same way. Shortly after the dentist injects novocaine into the gum around my tooth to fill a cavity, I can still feel the pressure of the driller but (luckily) not the pain—the pain no longer exists. Or if the novocaine is very strong, I may not feel even the pressure of the driller, but in this case there is no temptation to say that the pressure no longer exists. By contrast, it would seem absurd to say that the pain still exists just as the pressure does but I no longer feel it. Pains, itches, and tingles seem essentially subjective and logically private (i.e., accessible only) to their owners in a way the warmth or coldness or the pressure of an object is not. The latter are often said to be objective and public in their nature. Of course the very *feeling* of the temperature or pressure of something may be subjective and private, but the objects of this feeling (perception) are not.

The essential subjectivity and privacy of pains and other intransitive bodily sensations are two core puzzles about them, and they often go together. Related to these, or because of these, our knowledge of our own pains (and other bodily sensations) seems to be so secure that challenging someone about the accuracy of their pain report (when they are sincere and not confused) seems to be conceptually or logically out of the question. This again contrasts sharply with the case of knowledge about the external objects of our perceptions. We are sometimes wrong about the temperature or pressure of an object that we feel. I touch something a few seconds, and it feels hot. But you tell me that it was in fact very cold. I am not baffled; I take your word for it. The shot hurts: I feel a sharp sudden incisive pain on my upper left arm. You tell me that

that it didn't hurt, it was in fact pleasant. I am baffled! I suspect you must be joking; otherwise you must be deeply confused. That we seem to be incorrigible, or indeed infallible, in our beliefs about our pains and other intransitive bodily sensations is another puzzle about them. How could we have such epistemic authority if pain reports are simply a species of ordinary perceptual report? No perception seems immune to error. Illusion or hallucination is always a possibility: there is always an appearance–reality distinction in genuine perception. But nothing of this sort seems to apply to feeling pains.

It might be said that there are in fact no deep puzzles about pains and other intransitive bodily sensations of the sort alleged above, since even transitive sensations share the same features. I may be in error in feeling (perceiving) the correct *temperature* of an object, but just as in the case of pain, I cannot be mistaken about *feeling* (correctly or incorrectly) its temperature. After all they are all sensations—transitive, intransitive, or otherwise. Ordinary perception always involves conscious sensory experience. When I close my eyes, I don't think the things I was looking at go out of existence. It is rather that my visual experience of them ceases to exist—I no longer *see* them. But all sensory experiences, it may be plausibly said, are subjective, private, and the topic of incorrigible belief. What is so special about pains and other intransitive sensations?

Fair enough. But we don't typically locate sensory experiences on bodily locations, except perhaps in the head. Experiences are mental phenomena; as such, they are in the mind if they are anywhere. If the mind is in the head, sensory experiences can at most be in the head. But we don't think it absurd to locate pains, itches, and tingles in toes, thighs, arms, and so forth. Indeed we don't stare incredulously at the doctor who asks whether we feel a tingling sensation in our feet as she examines us for, say, a suspected neurological disorder. Come to think of it, it is *perfectly OK* with common sense that we may have sensations in body parts other than the head—say, under our right foot! Why? This, then, is another puzzle about pains and other intransitive bodily sensations: how to properly understand the common practice of locating what appear to be essentially subjective and private sensations in various parts of the body.

The proponents of so-called perceptual theories of pain argue that despite the many peculiarities involved, feeling pain is an instance of ordinary perception—typically the perception of some bodily condition, either tissue damage or impending tissue damage or some sort of assault on the biological integrity of bodily tissue. Many naturalistically oriented philosophers in the last half century have sought ways in which pains and other intransitive bodily sensations can be integrated into a unified theory of perception, perception of a mind-independent objective reality with which we interact in ways our scientific theories of perception and action have been uncovering. The

motivation behind this drive was to show that pains and other intransitive sensations do not threaten a scientifically acceptable naturalistic understanding of human mind and conscious experience, on the assumption that ordinary perception could be accounted for in naturalistically acceptable ways. Most of the puzzles we have discussed so far seem to point to the fact that there is something special about these intransitive bodily sensations. They seem to be signs or indications of what makes minds metaphysically special in the natural order of things, and many think they are the most salient tip of a metaphysical iceberg that cannot be made to fit into the natural order. Indeed many dualists have used them to make trouble for physicalistic naturalism. Ordinary perception, insofar as it involves conscious experience, already has enough to worry philosophers who want to see minds as part of physical order. But if pains and other intransitive sensations are not even perceptions of an ordinary (bodily) reality, they pose a much more radical and direct threat to such philosophers. At least, this has been one of the main, perhaps the most, important motivations for developing a perceptual theory of pain. Chapter 3 by Christopher Hill develops and defends a perceptual theory of pain, addressing many of the puzzles discussed above. His aim is to show that most of the puzzles can be traced back to our ordinary commonsense conception of pain, which is muddled. Once we see that this is the source of the puzzles, we can see that there is no metaphysical or scientific barrier to understanding pain in perceptual terms.

Traditionally, the proponents of perceptual theories have tended to be direct realists who reject the claim that perception of an external mind-independent reality rests on direct awareness of mental intermediaries (e.g., sense data). Indirect realists, by contrast, insist that our perception of mind-independent reality is indirect, although we are not ordinarily aware of this. The reasons for this traditional alignment between direct realists and proponents of perceptual theories of pain are complex and to some extent historically obscure. But part of the reason may be that direct realists have thought that repudiating mental intermediaries is necessary for defending physicalistic naturalism, that is, for the project of naturalizing the mind in general and perception in particular. The introductory chapter by Murat Aydede contains an extended presentation and critical discussion of the complex dialectic that existed among the various parties to this debate. It also reviews the basic trends in the scientific study of pain in order to reach a preliminary assessment of how the perceptualist–representationalist tradition in philosophy fares when compared with recent developments in pain science.

Chapter 11 by Moreland Perkins presents an exception to this alignment. Perkins develops an elegant indirect realist version of a perceptual theory of pain without

giving up physicalism—although his primary concern in this chapter is not to show how his indirect realism is compatible with physicalism.

So-called representationalist theories of perception are attempts to reduce the qualitative phenomenology of experiences (their very feels) to naturalistically acceptable representational relations. These are the most recent incarnation of direct realist views of perception, and they include an explicit attempt to address the worry about how to account for the feels of conscious perceptual experiences in a naturalistically acceptable fashion. These views are sometimes called strong representationalism or representationism (see chapter 6 by Ned Block), so as to distinguish them from the earlier indirect but “representative” views of perception, in which the direct object of perceptual awareness, although mental, is *representative* of a nonmental (physical) reality—hence, direct awareness of this intermediate object or quality constitutes the indirect *perception* of this physical reality. Strong representationalism denies direct awareness of these intermediaries and claims that, on the contrary, we are aware of the feel of the experiences by being directly aware of what our experiences represent, namely aspects of extramental reality with which we (directly) perceptually interact. The strong representational theory of pains is the application of this general view to pains. Chapter 4 by Michael Tye contains the most sophisticated development of this sort of view. He tackles many of the puzzles about pains discussed above that stand in his way. The following four chapters, by Murat Aydede, Ned Block, Barry Maund, and Paul Noordhof are mostly critical discussions of the extent to which Tye is successful in his attempt. They typically contain extended discussion that goes beyond mere commentary on Tye’s views. Tye’s replies in chapter 9 clarify his previous discussion, and more importantly, further develop certain aspects of his approach to pain, such as strong representationalism about the affective-motivational aspects of pain experiences, the subjectivity of pains, and the problem of spatially locating pains.

Not all physicalists think that the best way to naturalize pains and other conscious experiences is by making them follow the pattern of ordinary perception, or indeed by defending strong representationalism about experiences. Even though they may not reject strong representationalism, and thus may subscribe to a perceptual view of pains, some physicalists think that the best way to see pains and other conscious experiences as part of the natural order—and thus to remove some of the puzzles about them—is to show directly how to identify them with brain processes that have been discovered by scientists. Chapter 19 by Tom Polger and Ken Sufka falls in this category. The authors also discuss various methodological as well as theoretical issues that arise in any attempt to identify what seem to be radically different kinds of phenomena as one and the same. In their argument they use the example of pain and

what we scientifically know about pain. For this reason, the chapter also contains an accessible review of some aspects of the science of pain.

Despite the many puzzles involved in our ordinary understanding of pain, the dominant thread in the commonsense as well as the scientific conception of pain seems to be that it is a sensory as well as an emotional experience. If so, whatever the solution to the puzzle of spatially locating pains in body parts might turn out to be, we are reporting sensory experiences when we report pains. In other words, we seem to be making introspective reports when we report them. But this raises the question of how we can do this with such ease. Ordinarily, introspection is taken by many to require sophisticated mental capacities. But feeling pain and knowing one is feeling pain don't seem to be very sophisticated mental activities. Indeed, they seem to be quite basic and primitive. The intuition is that many animals and young infants feel pain, and that in some intuitive sense they know when they do. How is this possible? What is the epistemology of feeling pain, and more generally, what is the epistemology of introspecting conscious experiences? This question is discussed by Fred Dretske in chapter 2.

The intuition that animals feel pain, and that they have some rudimentary knowledge of their pains, can be resisted—indeed, has been famously resisted by Descartes, and more recently by Peter Carruthers. Whether animals feel pain is also a very live and pressing question for pain science, since a lot of pain research is done on animals. But apart from this, there is growing sensitivity to animal welfare issues. Since feeling pain seems to be an essentially subjective and private affair, how we know whether animals feel pain, or feel pain in much the same way that we feel pain, is an extremely difficult question to answer. Chapter 20 by Colin Allen and his colleagues, and parts of chapter 21 by Jaak Panksepp, take up precisely this question and suggest ways in which it can be fruitfully addressed. Allen et al. take a middle road and suggest a new experimental paradigm that they claim has the potential to deliver more significant results in the way of answering the question of animal pain. They discuss the methodology of third-person scientific pain research on animals and humans and suggest ways in which it can deliver first-person results. These two chapters also contain an accessible presentation of some of the relevant scientific research.

Perhaps the most salient fact about pains is that they hurt—they are “painful.” Pains have an immediate negative affect. The scientific community has embraced the idea that pain experiences have both a sensory-discriminative and an affective-motivational dimension. The neural mechanisms underlying both dimensions have been largely identified and studied extensively in the last thirty years or so, and we know quite a lot about their interactions. There are curious pain syndromes

where the affective aspect of pains is eliminated to various degrees while the patients are still capable of processing the nociceptive sensory information. Some of these patients identify their experience as pain but say that they don't find them painful and are not bothered by them, claims that are consistent with their nonverbal behavior and vital signs. The phenomenology of these patients' pain experiences seems to lack the usual negative affect.

Many chapters of this volume discuss the affective dimension of pains. Chapter 10 by Austen Clark argues that the painfulness of pain is not a quale. The term 'quale' is a technical term used by philosophers to denote the raw feels or phenomenological qualities of experiences. Clark's use of the term is restricted to the *intrinsic* sensory qualities of our experiences. He argues that pain's negative affect is not a quality intrinsic to pain experiences. On his view, it consists rather of mostly hard-wired functional connections of pain experiences to drive states. In contrast, Tye argues in chapters 4 and 9 that the affective quality of pain experiences is purely representational, just like their sensory-discriminative phenomenology—although Tye would agree with Clark that the phenomenal affective content of pain experiences is not an intrinsic feature of them. Aydede criticizes Tye's strong representationalism about pain's affect in chapter 5, to which Tye responds in chapter 9.

Not surprisingly, the perceptual–representational theories of pain developed by philosophers have traditionally emphasized the sensory-discriminative aspect of pains. Most have tended to downplay the affective aspect of pain, treating it as nothing more than the experiencers' immediate cognitive reactions to their experiences. Don Gustafson by contrast argues in chapter 12 that pains are best construed primarily as emotional states rather than perceptual states. He points to the intellectual history of conceptions of pain to support his recommendation. He argues that this view is not only consistent with the scientific facts about pain, it is also suggested by them. Indeed the science of pain has increasingly emphasized the affective-emotional dimension of pain and has uncovered a great deal about its underlying neural and psychological mechanisms. In chapter 21, Jaak Panksepp presents scientific evidence for the claim that emotional pain associated with grief, social stress, and social isolation implicates some of the same mechanisms involved in the affective dimension of physical pain. In fact, he argues, there is good reason to think that emotional pain has evolved out of the affective aspect of physical (in particular, visceral) pain.

The subjectivity and privacy of pain pose something of a dilemma for anyone who wants to scientifically study and conquer it. On the one hand we find scientists insisting on a conception of pain according to which pain is a subjective sensory and emotional experience (see chapter 1), and on the other hand we find the rigorous demands

of centuries-old scientific research methodology that insists on the objectivity of evidence and publicly verifiable results. So how is the scientist qua scientist to study objectively something that appears to be essentially subjective and private like pain? Although the problem also arises in the study of conscious experience in general, the problem for the pain researcher is especially pressing, for reasons already discussed in relation to ordinary perceptual experiences versus pain. Chapter 13 by Donald D. Price and Murat Aydede addresses this problem. The authors examine the role of introspection in the study of psychological phenomena and present a theoretical framework within which first-person methods of gathering data can be justified both scientifically and philosophically without compromising the objectivity of scientific methods. They go a step further and propose that pain scientists should involve themselves as subjects in their own experiments. Price and Aydede present a well-defined four-step experimental procedure to guide scientists in involving themselves in their own experiments. They argue that this paradigm, when combined with standard third-person scientific methodologies, is superior to standard scientific practice. They call their paradigm the “experiential-phenomenological approach.” In chapter 14, Shaun Gallagher and Morten Overgaard present other recent proposals that are very similar to the experiential-phenomenological approach. This seems to show that first-person methods, which have been traditionally shunned by scientists (especially those under the influence of behaviorism), are making a comeback. In chapter 16, Robert Coghill discusses how he and his research group have been using first-person methods in pain imaging studies with interesting and fruitful results. Eddy Nahmias presents further reasons (philosophical as well as scientific) to be optimistic about the prospects of successfully integrating first-person methods with the standard third-person methodology. Robert D’Amico presents a challenge to Price and Aydede by pointing out that there is a radical epistemic asymmetry between first-person and third-person data. Under certain conditions, introspective reports seem immune to certain kinds of revision, whereas third-person data are always revisable in principle. This seems to show, according to D’Amico, that the conceptual framework guiding first-person mental talk is not logically congruent with the conceptual framework guiding standard empirical evidence. Aydede and Price respond to this criticism in chapter 18 by arguing that the asymmetry exists only in degree, not in kind. They think that both kinds of evidence are revisable in principle.

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