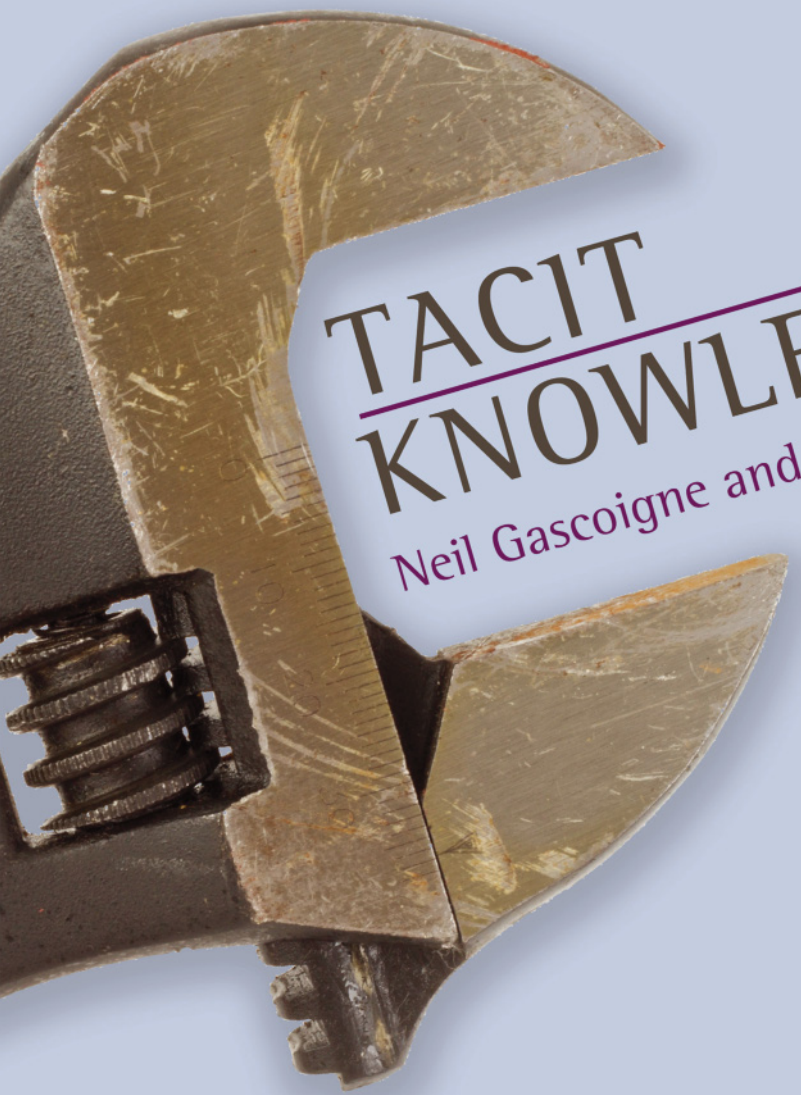

TACIT KNOWLEDGE

Neil Gascoigne and Tim Thornton

ROUTLEDGE

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Neil Gascoigne and Tim Thornton

Routledge
Taylor & Francis Group
LONDON AND NEW YORK

NG – For my girls!

TT – For new colleagues in the School of Health with thanks for their warm welcome.

First published in 2013 by Acumen

Published 2014 by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN
711 Third Avenue, New York, NY 10017, USA

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ISBN: 978-1-84465-545-8 (hardcover)
ISBN: 978-1-84465-546-5 (paperback)

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library.

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INTRODUCTION

> It is so difficult to find the beginning. Or better: it is difficult to begin at the beginning. And not to try to go further back.
>
> (Wittgenstein, *On Certainty*)

MAKING IT TACIT

We live in an age of explicit rules and guidelines; of aims and objectives; of benchmarks and performance indicators, standardized tests and league tables. Systematization abounds in the criteria specifying good practice and the delivery of public services; in the charters that outline rights and responsibilities in both civic society and in society's microcosms. A university's once unspecified expectation that its students will attend lectures and prepare work is often now formalized in contracts, and in return students are informed of the explicit "outcomes" of their learning activities. Likewise, in the UK at least, patients' expectations of the quality of care from the National Health Service (NHS) are increasingly constituted by waiting times and the availability of choice. Such reforms aim to replace a tacit or implicit understanding of practices with something explicit and codified. They are expressions of what Max Weber calls "intellectualization": the sentiment that one can "in principle, master all things by calculation" (1946: 139).

Weber traces the "disenchantment" (*ibid.*) of the world that this presages to the very origins of systematic epistemological inquiry, and in *The Craftsman* Richard Sennett similarly identifies as longstanding a suspicion of merely implicitly understood standards:

> Plato views it as too often an excuse for mediocrity. His modern heirs in the NHS wanted to root out embedded knowledge, expose it to the cleansing of rational analysis – and have become frustrated that much of the tacit knowledge nurses and doctors have acquired is precisely knowledge they cannot put into words or render as logical propositions. (Sennett 2008: 50–51)

As Sennett suggests, the "Platonic" drive towards systematization manifests itself equally in the move to obviate dependence on the skilful judgements of

individuals by formalizing the knowledge and making explicit the rules that experts purportedly employ in making them. In medicine, for example, the rise of the influence of evidence-based medicine (EBM) has been accompanied by a general codification of the relative merits of different forms of evidence in the shape of the EBM hierarchy, which prescribes that meta-analysis of randomized control trials are to be preferred to randomized control trials or merely descriptive studies. All are to be preferred to the clinical judgement of respected authorities.

One reason for wanting to expose the practical wisdom of experts to "rational analysis" is the fear that it otherwise remains hidden from those who manage them and are held to account for their activities. Others are the reasonable hope that expert judgement is objective, and the widespread assumption that objectivity and codification go hand in hand. It is a platitude that if a judgement concerns something about which we can be right or wrong then it must answer to some standard of correctness that has nothing to do with mere opinion. And it is tempting to infer from this that tacit or implicit forms of judgement or of understanding can be "cleansed" of subjective factors and rendered objective – and therefore genuine exercises of rationality – only in so far as they are codifiable in a principle or set of principles.

From this perspective, prospects for a form of knowledge or judgement that is not codifiable but is still genuinely answerable to features of the world appear limited indeed, and this conclusion seems more pressing still in the case of practical knowing. The intellectual difficulty here is brought out nicely in an exchange between Sennett and Grayson Perry, the Turner Prize-winning artist and craftsman–potter. Perry's report that he had the saw "Creativity is mistakes!" cast into the concrete of his studio elicited a delighted response from Sennett: "Oh very good! Oh I like this!". But then the conversation continued:

> PERRY: There is no right way to do it and it is always about my judgement: what is good.
> SENNETT: You've got an objective standard though, of course? You are judging yourself.
> PERRY: Yes [doubtfully] – but it can move. I have an aesthetic standard. You can't measure it. You can't put a ruler next to it and say it is good. (BBC Radio 4: 2008)

Perry's slogan suggests a normative standard for potting: it is possible to make mistakes and thus, learning from them, to become more skilful. However, he also denies that there is a *right* way to do things and rejects Sennett's suggestion that he exercises judgement against an objective standard. This may be because Perry aims to make works of art through his

pottery and thinks that aesthetic judgements are not answerable to features external to the sensibility of the artist. But even if one thinks of the manufacture of pottery not as art but as a *craft* – by contrast with the industrial manufacture of identical items – it would be implausible to think it might be judged with "a ruler". But that need not imply it cannot be judged according to some standard. Contrary to what Perry's doubtful response suggests, there is no implication from *not* being able to use a rule to codify judgements to such judgements *not* being right or wrong. What is required here is the concept of a form of knowing that is not codified, because not "calculable" with some analogue of a ruler, but which answers nevertheless to a genuine standard of correctness. This is what we will call "tacit knowledge".

"WE CAN KNOW MORE THAN WE CAN TELL"

The idea of tacit knowledge (or "tacit knowing", as he preferred) was first promoted by Michael Polanyi. A more detailed account of Polanyi's contribution to the topic will be offered in Chapter 1, but two of his suggestions concerning the nature of tacit knowledge run throughout this book and are worth noting in advance. We will look at one in this section and the other in the next.

The first suggestion comes from *The Tacit Dimension* (Polanyi 2009) and is, if not quite a definition, the purported fact that forms the basis of his own investigation: "we can know more than we can tell" (*ibid*.: 4). As Polanyi is quick to acknowledge, "it is not easy to say exactly" (*ibid.*) what this suggestion means. It does, however, imply that one can approach the nature of tacit knowledge through a form of "*via negativa*". What is tacit is what is not "tellable" under a suitable understanding of what that means. According to this method, one clarifies what "tacit knowledge" means by directing attention at some suitable antonym.

Let's consider a few intuitive examples of knowledge that might fit this criterion: recognizing someone's face, or a few hastily drawn lines *as* a face; throwing and catching a ball; operating a complex piece of machinery; riding a bicycle; being a concert pianist; reading a book or map; "reading" a patient or a set of complex data; navigating the shoals of interpersonal relationships; understanding a language; excising a brain tumour. These phenomena seem to involve normative, intentionally directed activities that might readily be characterized in terms of knowledge, but at the same time might seem to involve something that cannot be (at least fully) put into words.

Without further exploration, however, the suggestion that tacit knowledge can be investigated via some contrast is underdetermined. One might, for example, take Polanyi's talk of tellability to suggest a contrast between tacit and explicit. But consider the fact that people often draw on knowledge,

whether practical or theoretical, without being *aware* of it or consciously attending to it. One can drive home with one's mind on hard philosophy, rather than the journey, and successfully negotiate other traffic and the intervening junctions without being consciously aware of it. Nevertheless, the success of the venture implies the possession of knowledge, for example, of where to go as well as how to operate the controls. Should this be counted as tacit because the knowledge involved was not explicitly entertained?

Two accounts of less everyday examples are worth setting out because they are often used as paradigmatic examples of tacit knowledge. The first relates to the economics of poultry farming, which are such that it is a great advantage to be able to determine the gender of chicks as soon as possible after they hatch. In the 1920s, Japanese scientists discovered a method by which this could be done based on subtle perceptual cues with a suitably held chick. It was, nevertheless, a method that required a great deal of skill, developed through practice. After four to six weeks of practice, a newly qualified chick-sexer might be able to determine the sex of 200 chicks in 25 minutes with an accuracy of 95 per cent, rising with years of practice to 1,000–1,400 chicks per hour with an accuracy of 98 per cent (Gellatly 1986: 4).

The second story is that of skilled Polynesian navigators who were found to be able to navigate small out-rigger canoes "across two or three hundred miles of open sea; and do so in almost any weather, and even when less than fully sober. How is it done?" (*ibid.*: 5). Investigation suggested that the skill took years to master and was context-specific; that is, they were only able to navigate the seas in the natural conditions of their familiar part of the world.

What makes the first story particularly significant is that early Australian investigators were unable to determine the nature of the skill involved. Further the story has developed that the chick-sexers themselves were unable to express the nature of their knowledge (aside from saying which were male and which female). Likewise, the Polynesian navigators had mastered techniques – still, to this day, taught in the Wilson Islands – that they were unable to put into words. According to their folkloric reception, then, chick-sexers and navigators alike are unable to tell *how* they do what they do (how they know that *that* is a male; that *that* is the way to head). Hence they have both been held to by prime instances of tacit knowledge according to the first of Polanyi's key claims: that tacit knowledge is untellable.

These examples seem to undermine a view of knowledge sloganized by what we will call the *principle of codifiability* (PC):

> PC All knowledge can be fully articulated, or codified, in context-independent terms.

If the Polynesian navigators are unable to explain in general terms how it is that they are able to navigate, and if such navigation is a matter of

knowledge, then it seems that not all knowledge can be articulated in general terms. One can imagine them, under anthropological questioning back on land, being quite unable to describe what it was about the wind or tide which enabled it to guide them home. Their knowledge might resist general description on the shore.

But there is a stronger interpretation, especially of the first story, suggested by the common exaggeration according to which the chick-sexers themselves do not know how they determine sex. That reading suggests that there is knowledge that cannot be articulated at all. Call this the *principle of inarticulacy* (PI) of knowledge:

PI There can be knowledge that cannot be articulated.

It runs counter to a nuanced view of knowledge, summarized in the *principle of articulacy* (PA):

PA All knowledge can be articulated, either in context-independent terms (i.e. it can be codified) or in context-dependent terms.

Thinking of tacit knowledge in this general way as violating either PC or PA (and affirming PI in the latter case) may seem, however, to raise a difficulty. It may seem to threaten its status as *knowledge*. Roughly, if what is known cannot be carved out in words – if it is untellable – in what sense is there anything known? Both to answer this, and to refine the options, it is helpful to turn to the second suggestion from Polanyi.

THIS TIME IT'S PERSONAL

Polanyi's second suggestion relating to tacit knowledge is that it is *personal* knowledge, involving an "active comprehension of things known, an action that requires skill" (Polanyi 1958: vii). This suggestion forms part of his broader criticism of the notion that knowledge can aspire towards a degree of objectivity in which the features of the knowing subject drop out entirely. Polanyi's account of personal knowledge is an attempt to overcome the traditional opposition between objectivity and subjectivity by showing that the only coherent account of objectivity is one in which the personal plays an essential constitutive role. In this respect, the concept of personal knowledge suggests a rebalancing of what are often taken to be in opposition: theoretical and practical knowledge.

Polanyi's idea of personal knowledge has two aspects, both of which will be important in the body of this book. The first is the idea that it involves *active* comprehension. Personal knowledge is practical knowledge connected

to skill and ability. We will argue, later, that performance and the judgement of performance are connected. An audience member might be able to distinguish a good tennis player from a poor one, or an off-tune performance from one exhibiting fidelity to the melody, but be unable to make the finer discriminations we associate with expertise in an area because he or she does not have the appropriate skills or abilities. Having greater skill is having greater practical knowledge, which like all knowledge can be manifested in a number of ways including both performance and judgement.

The second aspect is that personal knowledge is connected to the exercise of a skill in particular contexts. There are two dimensions to this context-dependence. Part of what it *is* to be able to cope in a skilful way is to be responsive to the demands of particular situations. One example of such context-dependent knowledge is what Aristotle called "*phronesis*", which involves perceiving the moral demands that particular situations make on rational subjects. But just as for Aristotle the ability to make such judgements is a matter of the *character* of the *phronemos*, we will also take "personal" to flag the centrality for such knowledge of the skilled agent him or herself. Since personal knowledge and ability go hand in hand, the particular person is an important part of the context.

The personal perspective may be taken to suggest a more radical interpretation of Polanyi's "untellability" criterion. If knowledge can be personal – can depend on aspects of a subject's subjectivity – perhaps that explains why we can know more than we can tell. Perhaps some features, at least, of our subjectivity cannot be shared with others, cannot be clothed in language because merely public words cannot capture the private scene. This thought prompts an explanation of why we can know more than we can tell because the (putative) knowledge in question simply belongs *outside* the realm of articulation, the view we have labelled PI, the *principle of inarticulacy* of knowledge. While it seems clear how this may merit the description "tacit" by emphasizing the "personal" dimension, it is, as remarked at the end of the previous section, altogether less clear how it combines that with the objectivity required for "knowledge". How can states that cannot be articulated count nevertheless as knowledge? What is the content of such knowledge, for example? What *is* it that is known?

There is, however, space for another option here suggested by the connection between personal knowledge and both practical ability and context-dependence. One can take what is genuine in the stories of the chick-sexers and Polynesian navigators to illustrate the falsity of the more specific view (PC) that all knowledge can be fully articulated, or codified, *in context-independent terms*. Denying that all knowledge can be codified in context-independent general terms need not commit one to claiming that there is knowledge that cannot be articulated at all. That is, one can deny PC while still maintaining that if there is knowledge then it must have some sort of

demonstrable and articulable content (PA). We will argue, then, that the logical space for an account of tacit knowledge can be found by denying PC and PI, and affirming PA, taking tacit knowledge to resist articulation through codification – and hence answering to Polanyi's first suggestion under a particular interpretation – because it is *personal* knowledge, according to his second suggestion.

On the account promoted in this book, tacit knowledge is personal or practical in the senses conveyed in the above examples. It is untellable in so far as the tellable is equated with what can be codified in general terms. In this respect, tacit knowledge contrasts with explicit knowledge only in so far as the latter implies such context-free codification. But tacit knowledge need not lack an articulable content. It need not be *ineffable*. The contrast with explicit knowledge relates to the context in which such knowledge is made manifest and to the *persons* who – in so far as they exhibit the appropriate abilities – in part comprise that context. It can be articulated, then, but only practically and in context-dependent terms employing demonstrative concepts.

As we saw in the exchange between Perry and Sennett, thinking about practical knowledge (the cognitive basis of skills and abilities) tends to be conditioned by a limited sense of the conceptual possibilities available. Viewing tacit and explicit as opposites, and only the latter as answering to independent standards, encourages the temptation to see the former as knowledge in name only. But, following Polanyi, one can instead grant that tacit knowledge construed as personal knowledge depends on a knowing subject – since it is practical knowledge – while still answering to standards independent of the subject. So care has to be taken in fixing the proper interpretation of what contrasts with the tacit. In a slogan, the aim of this book is to steer a course between codification and ineffability: between the intellectualistic reductionism of PC and inflationary mysticism of PI. Tacit knowledge stands opposed to what can be codified in context-independent general terms, but it does not stand opposed to what can be articulated in any way at all.

THE ANTONYM OF "TACIT"

We can get a clearer picture of the potential dangers of approaching tacit knowledge through contrast with an antonym by outlining one strand of another recent book on tacit knowledge: Harry Collins's *Tacit and Explicit Knowledge* (Collins 2010a). Collins also approaches the nature of tacit knowledge through a contrast with what is explicit. He describes his strategy in a pithy summary: "explain 'explicit', then classify tacit" (*ibid.*: 1). But his particular interpretation of "explicit" distorts the account of tacit knowledge that flows from it.

A clue to the difficulty comes in the first sentence of the first chapter of his book. "Tacit knowledge is knowledge that is not *explicated*" (*ibid.*: 1, emphasis added). Now, this might be terminologically innocent if "explicate" is taken to mean *make clear*. If so, tacit knowledge is knowledge that cannot be made clear, which has echoes of Polanyi's first slogan. But Collins also slips into using it to mean *explain*. Thus tacit knowledge stands opposed to what can be explained. Even though he allows that this can be a matter of degree, it yields a much stronger claim. As we will describe, one consequence of this assimilation is that it undermines the idea that his subject matter is a form of personal knowledge – knowledge *for* a subject – at all.

We can begin to explain this by contrasting two claims Collins makes. He says, on the one hand, that:

> the idea of tacit knowledge only makes sense when it is in tension with explicit knowledge, and since cats and dogs and sieves and trees cannot be said to "know" any explicit knowledge, they shouldn't be said to know any tacit knowledge either. In fact, they don't "know" anything. (*Ibid.*: 78)

But he also goes on to suggest a comparison, which is supposed to render tacit knowledge less mysterious, between genuine tacit knowledge (e.g. possessed by human subjects) and just these non-human cases:

> In all the ways that do not involve the way we intentionally choose to do certain acts and not others, and the way we choose to carry out those acts, the human, per individual body and brain … is continuous with the animal and physical world. We are just like complicated cats, dogs, trees, and sieves … Sometimes we can do things better than cats, dogs, trees and sieves can do them, and sometimes worse. A sieve is generally better at sorting stones than a human (as a fridge is better at chilling water), a tree is certainly better at growing leaves, dogs are better at being affected by strings of smells, and cats are better at hunting small animals … That teaching humans to accomplish even mimeomorphic actions is a complicated business, involving personal contact, says nothing about the nature of the knowledge, per se. (*Ibid.*: 104–5)

So aside from the fact that we can *choose* to do some things rather than others, and can choose to do them in particular ways, while cats, dogs, trees and sieves cannot, the performance of the tasks, which for us is expressive of tacit knowledge, is just the same. In that respect, we are *just like* those animals, plants and artefacts, according to Collins.

A clue to how Collins addresses the apparent incompatibility between the claims that cats, dogs, trees and sieves *know nothing* while the way they "do" things is *just like* the way we do things when we express tacit knowledge is his focus on what he calls (in the last quote) the "nature of the knowledge, per se". In fact, this does not seem to mean the way humans *know* how to do the task, their knowledge, which is the focus of this book. Rather, it seems to mean the nature, not of the knowledge, but of the task itself. That is how it can be a common element between humans and non-humans. Thus taking the contrast to tacit to concern whether a task can be explained distorts the subject matter of the book away from tacit *knowledge*, the cognitive state of a subject, and towards a worldly *process* however it is carried out and whether the result of knowledge or not.

A second consequence is that Collins takes "tacit" to admit of degrees. Thus having said that "tacit knowledge is continuous with that possessed by animals and other living things", he goes on to say that "in principle it is possible for it to be explicated, not by the animals and trees themselves (or the particular humans who embody it), but as the outcome of research done by human scientists" (Collins 2010a: 85). This comment is relevant – is not a *non sequitur* – because such scientific explanation tends, on his account, to undermine the tacit status. It renders the examples highlighted via cats, dogs, trees and sieves merely "medium degree" (as opposed to strongly) tacit knowledge.

Elsewhere the opposition between being tacit and being scientifically explicable and the relative status of the former is made even more explicit:

> In *The Logic of Tacit Inference*, Polanyi argues persuasively that humans do not know how they ride, but he also provides a formula: "In order to compensate for a given angle of imbalance α we must take a curve on the side of the imbalance, of which the radius (r) should be proportionate to the square of the velocity (v) over the imbalance $r \sim v2/\alpha$." While no human can actually ride a bike using that formula, a robot, with much faster reactions, might. So that aspect of bike-riding is not quite so tacit after all. (Collins 2010b: 30)

So the fact that the task can be explained by others – whether or not they have practical knowledge how to do it – counts against it being fully tacit for a different subject, however he or she thinks about or grasps riding a bike. Explanation elsewhere has action at a distance here for the status of a subject's tacit knowledge.

This assumption is also operative when Collins notes that, for skilled typists, consciously following the rules they originally learnt by slows them down. He comments that "this seems to bear on nothing but the way humans

work; it does not bear on the way knowledge works" (Collins 2010a: 104). "Knowledge" *simpliciter* does not denote the personal knowledge or know-how of human typists, then, but rather a thoroughly generalized account of the task of typing that could be given. This assimilation is also suggested in a later comment on the limits of human typing: "The constraints on the methods available for efficient typing by humans (by contrast eg with machines) are somatic limits; they have everything to do with us and nothing to do with the task as a task – nothing to do with knowledge as knowledge" (*ibid.*: 104). That last line makes plains the real subject matter of Collins's book: not the *knowledge* a particular subject has but a *task*, whether carried out by humans, animals or even trees or sieves, independently of whether or not any knowledge is actually involved. Construing the antonym of tacit the way he does has far reaching consequences for his account and undermines the claim that it is an analysis of a form of knowledge at all.

Our analysis, by contrast, seeks to preserve a connection between tacit knowledge and the subject who has it, through the idea that it is personal knowledge. The fact that a task might be accomplished algorithmically by a machine via explicit programming, or by a human via explicit rules, does not undermine the fact that it can also be carried out as an exercise of skilled know-how by a person with relevant tacit knowledge. If so, it is tacit for the subject who possesses it.

CHAPTER OUTLINE

Chapter 1 focuses on arguments from two other philosophers in addition to Polanyi: Gilbert Ryle and Martin Heidegger. All three share an emphasis on the importance of practical knowledge ("knowledge how", or "know-how"), for understanding theoretical knowledge ("knowledge that", or "know-that"). Furthermore, all argue for the priority of practical knowledge by deploying a form of regress argument against a particular understanding of theoretical knowledge. We argue that Ryle's and Heidegger's views complement those of Polanyi to suggest an initial assimilation of tacit knowledge to practical know-how.

Chapter 2 explores Ryle's regress argument further and defends it against recent criticism. Although we argue that the regress argument is sound, and indicates the priority of knowing how over knowing that, that fact does not show that practical knowing how cannot be expressed. It can be articulated using context-dependent concepts in practical demonstrations. Consistent with PA, we suggest that tacit knowledge is best understood as such context-dependent but still conceptually articulated personal knowing how.

Chapter 3 begins by outlining Wittgenstein's discussion of rule-following and the conclusion that there is a way of grasping a rule which is practical.

It then looks at two responses to this argument, which might be used to support a view of tacit knowledge distinct from ours. Saul Kripke's sceptical interpretation suggests that following a rule has to be a tacit skill because there is no pattern of correct use that an individual can grasp. Adrian Moore's interpretation suggests that understanding a rule is a form of ineffable knowledge because it answers to nothing. Neither view, we argue, helps support a notion of tacit knowledge that is both tacit and knowledge.

In Chapter 4 we look at how John Searle deploys a version of the rule-following regress to argue for the existence of a "Background" of non-intentional know-how that makes possible our knowledge-that. We show that although this would give us an alternative account of the status of tacit knowing it is premised on an unsatisfactory account of rule-following. We conclude that a correct understanding of the challenge of the regress warrants no invocation of a Background to our practices, and thus no suggestion that our tacit knowing is somehow "hidden" from view.

Chapter 5 takes up the phenomenological challenge to our account of tacit knowledge as knowing how. This combines considerations discussed in Chapter 1 in relation to Heidegger with attempts, inspired by the work of Gareth Evans, to make good on the notion of nonconceptual content. Since our exploitation of demonstratives owes something to John McDowell, it might be confused with the latter's conceptualism. We consequently evaluate attacks on McDowell's conceptualism by Sean D. Kelly and Hubert Dreyfus, to demonstrate the failings of the phenomenological alternative and to clarify the extent to which our account of tacit knowing can be classified as "McDowellian".

Chapter 6 looks at the relation between tacit knowledge and language and asks two questions:

1. To what extent is language mastery a matter of tacit knowledge?
2. To what extent does tacit knowledge depend on linguistic mastery?

Tacit knowledge has often been deployed by philosophers to answer question 1. The task they have undertaken is to codify the understanding of a language that a speaker possesses in a grammatical theory. Since, however, speakers cannot articulate anything more than a fragment of such a theory, they must have merely tacit knowledge of the theory. Because the idea of tacit knowledge is not embedded in ordinary usage, an account of it is in part a matter of stipulation as well as analysis. Thus we do not argue that it is simply wrong to call grasp of a hypothetical theory of meaning "tacit knowledge". But we do show how different such a conception is from ours putting considerable strain on the claim that it is any form of knowledge. We reiterate the moral of Chapter 3, however, to argue that because language mastery involves context-dependent know-how it is an instance of tacit knowledge as we define it.

Question 2 is prompted by some recent sociological work by Harry Collins and Robert Evans, who argue that mastering the language of a particular practice, whether tennis or gravitational wave physics, involves a form of tacit knowledge they call "interactional expertise". We criticize this idea, but, by outlining a sketch of an externalist model of testimony, we highlight the connection between know-how, practical demonstration and linguistic articulation.

1. THREE SOURCES FOR TACIT KNOWLEDGE

1976 AND ALL THAT

In this chapter we will offer a preliminary explication of the concept of *tacit* or *personal* knowledge by focusing on aspects of the work of three thinkers: Michael Polanyi, Gilbert Ryle and Martin Heidegger. Having given this book its theme, the inclusion of Polanyi requires little justification; likewise that of Ryle, since, as we remarked in the introduction, there are good prima facie reasons for associating tacit knowledge with both knowing that and knowing how, yet it cannot seemingly be both. For some readers Ryle's anti-intellectualist argument for the primacy of knowing how will be sufficient to explain the introduction of Heidegger. To this can be added both the interest Ryle took at one time in the development of phenomenology and the isomorphism between Polanyi's work and that of one of Heidegger's scions, Merleau-Ponty. However, what follows is not intended as mere background. Polanyi *et al.* share a *concern* and a *method*, which serve both to illuminate the concept we are proposing to elucidate and to diagnose why competing views fall into the trap that (we will in subsequent chapters claim) they do. It is in the account given of Heidegger that this becomes clearest.

At its most basic, the *concern* is to rebut what is construed as an unacceptably Cartesian or Intellectualist conception of knowing. The *method* then has two characteristic moments: a *negative* phase involves the deployment of a regress argument against that conception, and a *positive* phase: the instatement of some progressive alternative. One important feature of this is the relationship between the two phases, of which two interpretations are immediately forthcoming, one *sceptical* the other *transcendental*. According to the former, the opposed conception of knowing is shown to give rise to a regress because it presupposes a process or activity of cognition that is itself question-begging. According to the latter, the conception of knowing is taken to be legitimate only in so far as its purview is restricted and the progressive alternative acknowledged as an account of how things

must be at a "deeper" level. On the *sceptical* interpretation the progressive alternative is proffered as just that – as an *alternative.* On the *transcendental* interpretation it is advanced as a *solution* to the regress problem. Crucially, then, although the transcendental strategy can radicalize our understanding of knowing in so far as it shows that the opposed conception is incomplete, its authority derives from redeeming some element of that conception.

Key to the position advanced in this chapter is the idea that the regress arguments to be examined take their form from Kant's in the schematism chapter of the *Critique of Pure Reason*. The schematism concerns the way concepts are applied in experience or, in Kant's term, to intuitions. The worry is that any account of how this can be a rule governed application of the concept to the intuition threatens a regress when it comes to selecting the right rule to match the right concept and intuition. As we will see (§"Schemata"), the account of the schematism of concepts is presented by way of a (transcendental) *solution* to the threatened rule-regress. But the form that the regress takes is in turn conditioned by the specific character of the understanding's judgements that Kant desires to legitimate. From this perspective, Heidegger, Ryle and Polanyi are viewed as undertaking the same task: offering their own versions of how to think about the work of schematism by offering their own responses to the rule-regress. As noted, this is most evident in the work of the early Heidegger (see §§"Being in the world" to "A world well lost?" below); but what is obvious there serves to clarify what is less so in the work of Ryle and Polanyi. It is to Polanyi, however, that we will turn first and to the view that the path to understanding tacit knowledge is signposted not "know thyself" but "we can know more than we can tell".

VARIETIES OF OBJECTIVITY

Michael Polanyi[1] made important contributions to several areas of physical chemistry before turning his attention to economics, politics and – increasingly – the philosophy of science.[2] To reflect this change in his interests he resigned the chair of physical chemistry at Manchester in 1948 in favour of a specially created professorship in social studies. Although occasionally cited by contemporary philosophers (cf. Johnson 2007: 4), Polanyi's work has not been given any significant critical evaluation;[3] although since even the most ardent of his admirers concede that his writings are at best "rather rapid-fire sequences of insights … without much pause for examining … possible counterarguments" (Sen 2009: 15) and at worst "often obscure, sometimes mistaken, and couched in a rhetoric that most philosophers find it hard to tolerate" (Grene 1977: 167), he did little to obviate such a fate. Nevertheless, Polanyi was much admired during his lifetime, not least for his defence of

science's speculative autonomy against the rival conceptions of two rather contrasting opponents: on the one hand, that of the Stalinists; on the other, that of the positivists. Since these "defences" offer a convenient way into the topic, we will examine them briefly.

In relation to Soviet science, the issue is with how, given the logical gap between evidence and theory, one might distinguish a Lysenko from a Dobzhansky (see *TD*: 3; Dobzhansky 1955). For Polanyi, the understanding of the "nature and justification of scientific knowledge" (*PK*: vii) that made the crude Soviet instrumentalization of inquiry possible is itself based on the presupposition that "believing what I might conceivably doubt" entails a "self-contradiction" that is more than just "apparent" (*PK*: 109). The key to exposing Stalin's pseudo-scientific abettors, then, is to undertake the "conceptual reform" (*PK*: 109) required to resolve the apparent self-contradiction that makes their position seem plausible. That reform turns on the "novel idea of human knowledge" (*TD*: 4) summarized in the slogan referred to in the introduction, to the effect that our knowledge outruns the limits of what we can report.

Since the underlying worry here is a variant of the demarcation problem that exercised, among others, the logical positivists and Karl Popper, one might suppose that Polanyi would find common cause with such approaches. However, when critics write admiringly of Polanyi's post-empiricist philosophy of science, they have in mind the following sort of stance: "I agree that the process of understanding leads beyond … what a strict empiricism regards as the domain of legitimate knowledge; but I reject such an empiricism" (*TD*: 21).

For Polanyi, the reductive empiricist's blindness to the creative, non-codifiable dimension of inquiry turns out to be yet another manifestation of the cultural malaise that found expression in Lysenkoism. In the terms introduced above, the *concern* is to overcome an intellectual worldview still in thrall to the quest for the "purity" of an objective conception of knowledge in response to a global sceptical doubt: "The method of doubt … trusts that the uprooting of all voluntary components of belief will leave behind unassailed a residue of knowledge that is completely determined by objective evidence" (*PK*: 269).

The implication here is familiar from pragmatist and other narratives of the distorting effect of a Cartesian "quest for certainty": an *un*reasonable doubt determines epistemic criteria that set the bar for knowledge beyond the reach of finite, embodied creatures. Since this undermines any cognitive distinctions among dubitable beliefs, the threat is that one is left with no criterion with which to disambiguate genuine scientific inquiry from ideological usurpation. Of course, this threat would be obviated if one could regroup around the idea that the *subjective* is the source of doubt, to be contrasted with a realm of *objective* observation statements; that scientific theories are